Emotion in Politics:

Disgust and Empathy in a Mediating Model of Australian Political Ideology

Abbey R. Walker

School of Psychology

University of Tasmania

A report submitted as a partial requirement for the degree of Bachelor of Psychological Science with Honours in Psychology at the University of Tasmania, 2016.

Statement of Sources

I declare that this report is my own original work and that contributions of others have been duly acknowledged.

Abbey Walker

Date: 13/10/2016

Acknowledgements

Firstly, I must thank my supervisor Dr Christine Padgett. You have been unbelievably helpful, organised and supportive. Thank you for dealing with my constant flow of ridiculous emails and for making my life so much easier than it could have been. You have really gone above and beyond this year - any student who has you as a supervisor in the future will be lucky to have your guidance.

To my most wonderful boyfriend Byron for being my very own psychologist, proof reader, consultant and masseuse. I have never met anyone as supportive as you, thank you for putting up with me and my stress tantrums over the last 4 years. I seriously would not have made it this far through Uni without you, and your beautiful brain, by my side.

To my beautiful family, think yourselves lucky that I wasn't living at home for the last four years. I hope you know that I could never have done any of this without your support, I love you guys. Also, I think you should thank me for being the first in the family to write a book.

To my fellow honours buddies, I really can't believe that after about a million stupid questions to each other, we are done! Unbelievable really. Thanks for making me feel like I was never alone in this crazy whirlwind, and for not rubbing it in (too much) when you got better grades than me. Look at us go, nobody can stop us now!

A special thanks to Caitlin and Ashley, my daily study buddies, for fuelling my passion for crazy desserts and for putting up with my fluctuating levels of crazy. This year was worth it just to become such good friends with you two! Also huge thanks

to Annie, for helping me to develop the APIS scale. I can’t wait to see (Walker & Fitzgerald, 2016) in future literature.

Thanks to everyone who took the time to log onto my survey, and to Rachael Grieve for putting my survey online – you really lightened the load this year!

Finally, a massive thankyou to anybody who has offered me help, advice, or even a drink along the way.

Table of Contents

List of Tables

List of Figures

Emotion in Politics:

Disgust and Empathy in a Mediating Model of Australian Political Ideology

Abbey Walker

Word Count: 9988

Abstract

Previous research depicting the relationship between disgust sensitivity (DS) and political ideologies (PI) has found dissimilar results (i.e. Brenner & Inbar, 2014; as compared to Inbar, Pizarro, & Bloom, 2009). Due to the discrepancy, the current study aims to determine whether analysing affective empathy (AE) and cognitive empathy (CE) as mediators of the relationship, will enhance the ability to predict PI from DS scores. The study employed a sample of 170 psychology undergraduates, with a mean age of 23.48 years (*SD* = 8.49), 81% of which were female. Constructs were measured using the Disgust Scale-Revised, Basic Empathy Scale – Adults, and the Australian Political Ideology Scale (developed as part of the study). Results indicate the possibility of an increasingly complex relationship between DS and PI, as a partial-mediation effect of AE was found, *b* = 0.24, *95%BCa CI* [.004, .760], representing a small completely standardised effect of 0.31, *95%BCa CI* [.001, .0952]. No mediation effect was found for CE, *b* = -0.03, *95%BCa CI* [-.31, .19], with a negligible completely standardised effect, -0.003, *95%BCa CI* [-.041, .024]. This may be evidence of a multifaceted relation between DS and PI, depicting an emotion-based, rather than cognition-based relation.

Our emotions play a vital role in numerous areas of our lives (Frijda, 2007). Emotion is pertinent in all significant events in a person's life, drives behaviours, largely impacts on our wellbeing, and enables us to better describe our personalities (Smith & Lazarus, 1990). Even though the concept is central to human existence, its definition is yet to be agreed upon in the literature (Plutchik, 2001). Many scholars have proposed differing, multi-dimensional theories of the concept of 'emotion'. These diverging theories of emotion have independently evolved from psychological schools of thought, as well as academics external to the discipline of psychology (i.e. biological explanations; Plutchik, 2001). The inability of academics to agree upon a fixed explanation of the concept is a is a testament to its complexity.

One of the many explanations of emotion derives from appraisal theorists who define emotion as a process, rather than a state (Moors, Ellsworth, Scherer, & Frijda, 2013). The appraisal theory hypothesises that human emotion results from an evaluation of events, which elicit reactions differently in different people (Moors, 2007). Appraisal theorists also describe emotions as adaptive responses which reflect an evaluation of the organism's environment (Moors et al., 2013). The process is continuous. Changes in the components of an individual's environment spur a relay of information and feedback in order to produce a single emotion, or sequence of emotional episodes (Moors et al., 2013). More broadly speaking, the appraisal process is the individuals' assessment of the environment for their ability (or inability) to obtain goals. Often these goals aim to achieve self-preservation (Frijda, 2007). In sum, emotions are necessary to reach the evolutionary goal of survival (Schaller, 2006). For example, disgust is an emotion necessary to protect oneself against contamination (Plutchik, 1980).

Emotions not only act as a function to ensure human survival, but also largely contribute to differences in human cognition and consequently the development of our beliefs, ideals and viewpoints (Oatley, Parrott, Smith, & Watts, 2011). Emotion is central to our understanding of cognition; it impacts upon attention, memory and decision making, as well as interpersonal interactions (Oatley et al., 2011). Emotion and cognition are often thought of as parallel systems in that one of the concepts impacts or alters the effects of the other (Oatley et al., 2011).

Political Ideology and the role of Emotion

Recent works have reinstated the importance for scholars to divulge individual differences which co-vary the process of ideological placement (Jost, 2006). Illuminating the antecedents of these liberal vs. conservative ideologies has become an important focus in political psychology, especially with the increasingly polarized nature in which western world politics operate (McCarty, Poole, & Rosenthal, 2008). The left-right, or liberalism-conservatism distinction is argued to be a pattern of political attitudes in which people tend to gravitate towards, for reasons which surpass individual party policy domains (Jost, Glaser, Kruglanski, & Sulloway, 2003). Alford, Funk and Hibbing (2005) describe the left side as a 'contextualist' orientation, in that these parties have an opposition to authority and hierarchy, low punitiveness, high empathy, an optimistic view and a higher tolerance of out-groups. This is compared to the 'absolutist' perspective, which is in support of societal inequality, maintains rigid morals and high punitiveness, and emphasises in-group unison. It is thought that the two enduring dimensions of the liberal-conservatism debate are; opinions around inequality, and attitudes to social change - in contrast to tradition (Jost et al., 2003).

Differences in the development of our political views have been shown to be associated with emotion (Ben-Nun Bloom, 2014; Inbar, Pizarro, Iyre, & Haidt, 2012). Emotions are automatic, and are thought to engage the 'fast' processing system (Fellous, Armony & LeDoux, 2002). Kahneman (2011) explains that the fast system is characterised by the use of heuristics (i.e. mental shortcuts) to inform judgements. Therefore, decisions guided by emotion are likely to be faster than those made without emotions. The slow processing system requires a considerable amount more mental effort, and thoroughly examines evidence before drawing conclusions (Kahneman, 2011). Stoker, Hay and Barr (2015) state that individuals primarily rely on fast thinking regularly in life, and it habitually guides the daily decision making process. This is especially true when individuals form political-based opinions (Stoker, Hay, & Barr, 2015).

Research by Ekman (1982) explains that there are six basic/primary emotions; fear, anger, sadness, enjoyment, surprise and disgust. Each of the basic emotions are universal and are paired with systematic patterns of facial muscle movements (i.e. expressions). Ekman also articulates that each of the basic emotions are combined in order to create more complex emotions. The primary focus of the current thesis is the emotion of disgust. Disgust is an emotion particularly relevant to research in political psychology. Many researchers have shown the ability to predict political views based on disgust, in that high levels of disgust predict conservative attitudes (Ben-Nun Bloom, 2014; Haidt & Graham, 2007; Inbar et al., 2012; Olson, Cadge, & Harrison, 2006).

Though a relationship between disgust and political orientation has been established by researchers, not all who have endeavoured to replicate these findings have been successful (i.e. Brenner & Inbar, 2014). The discrepancy in these findings

may possibly indicate the existence of a more complex relationship between the two concepts. Researchers have also shown the ability to predict political ideology from individual levels of empathy (Pratto, Sidanius, Stallworth, & Malle, 1994). Remarkably, existing research combining the ability of disgust and empathy to concurrently predict political ideologies was not found.

Disgust

Disgust has been described as the repulsion response to revolting stimuli, commonly initiated by offensive tastes, scents or sights (Darwin, Ekman, & Prodger, 1998). Disgusting stimuli are equally thought of as distasteful and dangerous (Rozin, Haidt, & McCauley, 2008). Exclamations of disgust are often paired with facial expressions and behaviours which function in order to prevent individuals coming into contact with potentially dangerous stimuli (Darwin et al., 1998). Hence, disgust is thought to facilitate a behavioural defence mechanism against contamination and disease (Plutchik, 1980), as it enables recognition of the infection potential within certain stimuli (Curtis & Biran, 2001). Consequently, Schaller (2006) described disgust as a function of the 'behavioural immune system'. The behavioural immune system helps to detect infectious pathogens, triggering the cognitive, behavioural and emotional responses necessary to avoid infection. Triggering the emotion of disgust is associated with neural activation in the thalamus and medial prefrontal cortex (Lane, Reiman, Ahern, Schwartz, & Davidson, 1997), other researchers provide evidence for disgust to activate the amygdala, thalamus, midbrain and visual cortex (Moll, de Oliveira-Souza, Bramati, & Grafman, 2002).

Theoretical Model of Disgust

Theorists have developed a conceptual model in order to clarify the underpinnings of disgust. Disgust, according to this conceptualisation, has been though to consist of three separate constructs (Olatunji et al., 2007). The first construct, core disgust, is the feeling of offensiveness that is elicited in response to unusual or toxic substances, so as to protect the person against contamination (Rozin et al., 2008). Rozin and Fallon (1987) explain that in order to elicit core disgust, the person must have an impending likelihood of oral contact, a sense of offensiveness, and stimuli must hold a high level of perceived contamination potency.

Though disgust may have initiated as part of an evolutionary food rejection system, the emotion has evolved to elicit as a response to a wider array of circumstances (Rozin et al., 2008). The second construct, animal-reminder, is the feeling evoked by reminding humans of their existence as mere animals. For instance, humans are fragile - they can be injured (expose bone and tissue, shed blood) and will one day become deceased. Therefore, people are disgusted by stimuli which reminds them of their fragility. Similarly, the animal-reminder element protects the consciousness from being made aware of the certainty of death (Rozin et al., 2008). Furthermore, exposure to contaminated fluids resulting from body envelope violations (i.e. blood) act as tokens of human vulnerability, and thus also elicit the disgust response (Rozin et al., 2008). Persons are also disgusted by animal-like behaviour. For example, society places norms around the ‘proper’ way to eat, excrete and have intercourse - in order to avoid feeling animal-like. Thus, evidence shows that when faced with events serving as reminders of their animal origins - humans feel disgusted (Rozin et al., 2008).

The final construct is contamination-based disgust. This construct is the perceived threat of possible infection/disease and is therefore purely cognition based. That is, for an individual to classify certain stimuli as disgusting depends on their understanding of that stimuli, and its context and history. Negative contagion is a belief held mostly by western world adults and is produced by disgust elicitors (Rozin, Haidt & McCauley, 1999). When at least two stimuli come into contact (one or more of which are considered infectious), there is a belief the two entities will permanently share pathogens (Rozin et al., 1999). No matter how brief the time period of contact is, humans are likely to permanently render the originally 'clean' stimuli as contaminated (Rozin et al., 1999). For example, stirring a bowl of soup with a used, but since disinfected fly-swatter will render the soup unsafe for consumption. However, the soup would have been consumed without the knowledge of the fly-swatter's use during preparation (Olatunji et al., 2007).

Disgust: Not just contamination related

As aforementioned, the behavioural immune system is a useful mechanism in protecting against infection. However, the system primarily responds to a set of general, superficial cues which result in avoidance of non-threatening stimuli, including people. Evidence has shown these cues to include race (Faulkner, Schaller, Park, & Duncan, 2004), old age (Duncan & Schaller, 2009), physical disability (Park, Faulkner & Schaller, 2009), as well as obesity (Park, Schaller, & Crandall, 2007). Hence, the behavioural immune system has been shown to lead to the adoption of xenophobic attitudes and other appearance-based prejudices (Schaller & Park, 2011). Rozin and colleagues (2008) propose that disgust has a protective mechanism for the social self. That is, disgust helps to protect the self from complex stimuli that may be culturally or morally aberrant (i.e. homosexuality, incest, racism,

obesity), making disgust a concept relative to culture and time. Rozin and colleagues explain that humans also feel disgusted in response to situations which defy morality. For example, after observing a video about American neo-Nazis, participants in an experiment conducted by Sherman, Haidt and Coan (2007) reported extremely high disgust. Therefore, it is not just food and contamination fears which elicit disgust, but so too do themes of racism, betrayal and hypocrisy. Disgust has evolved to refer to a function which serves to protect the self from physical, social, as well as psychological harm (Rozin et al., 2008).

Disgust Sensitivity

As with most emotions, humans experience disgust in a variety of diverse ways, and react to disgusting stimuli with varied intensities (from mild to severe; Rozin, Haidt, & McCauley, 2000). Each person's reaction to disgusting stimuli varies depending on their propensity to deem stimuli as threatening during their appraisal process. Some individuals are more likely to conclude stimuli as threatening during this appraisal than others (Rozin et al., 2000). That is, whether stimuli are considered unpleasant or disgusting is a result of their level of disgust sensitivity (Van Overveld, de Jong, Peters, Cavanagh, & Davey, 2006). Hence, individuals who show more intense, adverse reactions to stimuli are termed to have a 'high disgust sensitivity'. This is in comparison to those with lower levels of disgust sensitivity, who will display less extreme reactions.

Having a high level of disgust sensitivity has been shown to be a predictor of a variety of individual differences. For example, researchers have found that having high levels of disgust sensitivity is a risk factor for a variety of anxiety conditions (Olatunji & Sawchuck, 2005). Similarly, high levels of disgust sensitivity also predict conservative voting patterns (Terrizzi Jr et al., 2010). As having high disgust

sensitivity (and therefore a stronger behavioural immune system) predicts both anxiety and conservatism, it is likely that individuals will inherently be more vigilant of the happenings within their environment. In turn, this will lead to an increase in processing negative, anxiety-provoking information (Schaller & Park, 2011), resulting in the development of conservative attitudes, due to fears of contamination (Faulkner et al., 2004).

Previous research has also assessed whether sensitivities to disgust differ depending on demographic variables. Evidence has been contradictory, with Haidt, McCauley and Rozin (1994) finding that disgust differed between sexes (women more sensitive than men), religion (Jews more highly sensitive than Protestants) and race (Asian and black participants being more sensitive than white participants). Similarly, Brenner and Inbar (2014) also found that disgust sensitivity levels differed by gender (women significantly more sensitive), education (people with a bachelor degree had significantly higher levels of disgust sensitivity than those with vocational training), as well as finding age differences (older participants less sensitive) and political ideology (those with conservative views were more sensitive). However, Inbar, Pizarro and Bloom (2009) found no differences in disgust sensitivity levels depending on religious identification, age or income. Terrizzi Jr and colleagues (2010) also found no differences in disgust sensitivity between gender, wage or healthcare.

The Relationship between Disgust Sensitivity and Political Ideology

Disgust is also salient within judgements of morality (Inbar et al., 2009). Differing ideals, amid behaviours and beliefs which are classified as morally just, are often at the root of political disagreements between liberal and conservative parties

(Haidt & Graham, 2007). In research conducted by Haidt and Graham (2007), it was found that participants with conservative political beliefs were more likely to hold the preservation of purity at the forefront of concepts guiding their moral philosophy, as compared to liberal voters. Consequently, when asked to decide whether a person's actions were to be classed as 'right or wrong', self-described conservatives were more inclined than liberals to guide their moral judgements based on whether someone 'did something disgusting'. Thus, disgust is an emotion relevant to morals, and in turn, politically conservative standpoints.

Research has also shown that having a high disgust sensitivity is correlated with prejudice attitudes towards people in the 'outgroup', (i.e. immigrants; Faulkner et al., 2004) and sexual minorities (Terrizzi Jr et al., 2010). High levels of disgust sensitivity also correlate with high levels of social and political conservatism, right wing authoritarianism and religious fundamentalism (Inbar et al., 2009; Inbar et al., 2012; Terrizzi Jr et al., 2010). In a study conducted by Inbar and colleagues (2009), it was found that the opposition of gay marriage and abortion were significantly correlated with high levels of disgust sensitivity. This evidence is in line with other findings which indicate that people with conservative attitudes are likely to oppose same-sex unions (Olson et al., 2006). Inbar and colleagues (2009) also found that self-reported conservatism predicted disgust sensitivity.

Researchers have also verified that by inducing the emotion of disgust, participants have harsher, more negative responses to issues around gay adoption and watching internet pornography (Ben-Nun Bloom, 2014). Schnall, Haidt, Clore, and Jordan (2008) also found that by manipulating participants disgust levels (using a clean-versus-dirty environment), participants in the dirtier environment made harsher moral judgements, in comparison to those in a clean environment. Similarly, Schnall

and colleagues found that the induction of disgust (by watching a disgusting film, or being in a disgusting environment) led to the implementation of more severe moral judgements. The above evidence indicates that having higher levels of disgust leads to the adoption of conservative moral and political appraisals.

Studies show that the contamination domain of disgust has the strongest relationship with conservative political views, as compared to the core and animal-reminder domains (Inbar et al., 2012). Inbar and colleagues (2009) explain that disgust is an evolutionary and primary emotion which emerges before humans develop political beliefs. Disgust reactions to tastes are evident in newborns (Rosenstein & Oster, 1988), while reactions to disgusting odorants typically emerge around 5 years of age (Petò, 1936; Stein, Ottenberg, & Roulet, 1958). Hence, it is thought that emotional dispositions (such as that of disgust) are unlikely to be altered by the later development of political attitudes. Consequently, it is likely that the relationship may be linear, with disgust sensitivity predicting political ideologies (Inbar et al., 2009). That is, when a person's disgust sensitivity is low, so too are their conservative attitudes. Likewise, when disgust sensitivity is high, conservative attitudes are dominant. In studies conducted by Terrizzi Jr and colleagues (2010), a stronger correlation was found between disgust and conservative ideologies when participant disgust levels were manipulated (through writing a passage of text describing the texture, taste, smell and their stomach's reaction to eating maggots), as compared to when their inherent disgust sensitivity levels were used as a predictor.

Conflicting Evidence on the Relationship between Disgust and Political Beliefs

Though a relationship between the concepts of disgust and political orientation has been validated by many researchers, the strength of this relationship is not consistently strong. For instance, Inbar and colleagues (2012) found a small

effect size for the relationship between conservatism and disgust sensitivity, while Brenner and Inbar (2014) were unable to find a significant effect. Similarly, other studies have revealed that disgust predicts liberal economic attitudes (Petrescu & Parkinson, 2014). Inbar and colleagues (2009) specify that level of disgust sensitivity is just one of many individual differences known to be associated with political orientation. This may explain why despite great empirical evidence and theoretical background suggesting a strong relationship between disgust and political attitudes, the data suggests otherwise. Because of this, the current study suggests that it is possible there may be another confounding variable impacting on this relationship, and without accounting for its contribution, the data will remain insufficient in its ability to explain the relationship. It is hypothesised that this confounding variable may be the possession of high levels of empathy.

Empathy

Empathy is another emotion identified as a predictor of political attitudes (Crawford, 2014; Mencl & May, 2009). Definitions of empathy are largely diverse and include descriptions of an entity dependent upon knowledge, communication, capacity, mental processes, ego expression, previous experience and perceptions (Reed, 1984). Generally, empathy can be thought of as the bodily and psychological experience of feeling and understanding the momentary emotional state of another person (Salazar-Lopez et al., 2015). Empathy allows individuals to understand how and why others think and feel the way they do. It also provides us with the capacity to judge how our own behaviours may be perceived by others (Crawford, 2014). In comparison to more general definitions of emotion, empathy is contradictory in that it challenges the idea that emotions exist in order to fulfil personal goals/needs (Wondra & Ellsworth, 2015).

Crawford (2014) explains that our empathy levels lead to a behaviour disposition – that is, more empathetic individuals participate in more pro-social behaviours and are less likely to display social prejudices. Joliffe and Farrington (2006) explain that a lack of empathy predicts antisocial and aggressive behaviours, resulting from the inability of the individual to comprehend the negative reactions of their target. People high in empathy are able to assess these unfavourable consequences, in turn making them less inclined to repeat negative behaviours in the future (Feshbach, 1975). Similarly, by inducing empathy in their participants, Batson, Chang, Orr, and Rowland (2002) found that high levels of induced empathy led to more favourable attitudes to drug addicts and a willingness to provide higher levels of funding to help them recover. High levels of empathy in adolescence has also shown to reduce levels of bullying (Ang & Goh., 2010; Joliffe & Farrington, 2006). Typically, evidence shows that women have higher levels of empathy than men (Carrè et al., 2013; Joliffe & Farrington, 2006). However other researchers have found there to be no sex differences (Cox et al., 2012). Difficulties with moral reasoning have been linked to individuals possessing a defective mirror neuron system, therefore impairing empathetic responses (Hein, Silani, Preuschoff, Batson & Singer, 2010). The brain uses distinct neurons to help humans feel what others may be experiencing. These neurons, termed mirror neurons, fire in the brain both when an individual engages in behaviour, as well as when the individual observes another's behaviour (Carr, Iacoboni, Dubeaut, Mazziotta, & Lenzi, 2003).

A greater understanding of the underpinnings of empathy may help to explain how/why/when interpersonal relationships alter from positive to negative, or vice versa (Crawford, 2014). Persistent conflict/tensions between groups is largely characterised by low levels of empathy (Crawford, 2014). Henceforth, empathy has

been identified as a crucial element in the attainment of human rights, democracy and peace (Crawford, 2014). Evidence also shows that having high empathy levels leads to the adoption of more liberal views (Pratto, et al., 1994). Furthermore, elements of empathy impede on the desire for dominance of particular social groups over others (Pratto et al., 1994). Similarly, lower levels of empathy lead to amplified negative views towards stigmatized groups (i.e. drug addicts), as compared with high levels which result in more positive attitudes (Batson et al., 2002). By increasing empathy levels, attitudes can become more positive (Batson et al., 2002). The aforementioned shows evidence for empathy regulating political attitudes. Tagney and Dearing (2002) explain that this may be due to the fact that individuals high in empathy are likely to be able to reason and evaluate the adverse effects of their possible actions and decisions.

Affective and Cognitive Empathy

Empathy can be broken down into two components; cognitive and affective empathy (Jolliffe & Farrington, 2006). The two dimensions are seen as interrelated, yet distinct (Cox et al., 2012). The cognitive component involves identifying and understanding another's emotional state (Hogan, 1969). Strayer (1987) articulates that the cognitive component is the process in which the feeling of empathy is formed. That is, cognitive empathy is a top-down process - the understanding of others' emotions is based on the ability to distinguish ourselves from others (Jankowiak-Siuda, Rymarczyk, & Grabowska, 2011), and understand another's feelings, intentions, beliefs or desires (Hein & Singer, 2008). Hence, cognitive empathy is also termed theory of mind, perspective taking or empathic accuracy (Olderbak, Sassenrath, Keller & Wilhelm, 2014).

Cognitive empathy is shown to be related to higher levels of intergroup contact (Falk & Johnson, 1977), and reduced negative stereotyping (Todd, Bodenhausen, Richeson & Galinsky, 2011). Mencl and May (2009) also found that cognitive empathy significantly predicted individual intention to act morally, as well as principle based evaluations (i.e. beliefs held about the welfare of others). Similarly, Kalliopuska (1983), along with Leith and Baumeister (1998) both found the cognitive element of empathy to be related to moral judgment. A disruption in cognitive empathy is often true for those diagnosed with an Autism Spectrum Disorder (Cox et al., 2012).

The affective component of empathy, otherwise referred to as emotional contagion or emotional empathy, allows us to feel the emotions another person is feeling (Batson, 2009). Therefore, it allows us to perceive the wellbeing and emotional state of others, and form appropriate emotional responses to these states (de Wied et al., 2007). Strayer (1987) suggests that affective empathy is felt by the individual as a result of the cognitive evaluation of another's state. Jankowiak-Siuda and colleagues (2011) explain affective empathy is a bottom-up process. That is, the neural representation systems internally reflect another's emotional state, enabling an individual to achieve a similar state of feeling.

Affective empathy has been shown to lead to more successful interpersonal outcomes within organisational negotiation processes, leading to favourable conclusions drawn for all involved (Allred, Mallozzi, Matsui & Raja, 1997). Similarly, Moore (1990), and Pizarro and Salovey (2002) found the affective component of empathy to be closely related to a motivation to act morally. Disruptions in affective empathy indicate psychopathology (Cox et al., 2012). The

affective component of empathy relies both on biology and social context (Iacoboni, 2009) to enable emotional mimicry (Nummenmaa et al., 2008).

By inducing both cognitive and affective empathy separately in their participants, Nummenmaa and colleagues (2008) found a greater increase in neural activity and blood flow (using fMRI technology) by eliciting affective empathy in comparison to cognitive. The researchers separately induced cognitive and affective empathy by asking participants to view a series of scenes. Affective empathy was evoked through the use of emotional interpersonal scenes (i.e. attacker and a victim), while cognitive empathy was induced via viewing non-emotional interpersonal scenes. At no time during the experiment were brains in the cognitive empathy state more activated than when in the affective state. Activity associated with affective empathy was located primarily in brain regions involved in emotional processing (thalamus), perception of faces and bodies (fusiform gyrus), and understanding/simulating others actions (inferior parietal lobule). Affective empathy also resulted in a much higher rate of mirroring (activation of the premotor cortex) than cognitive empathy. During cognitive empathy, activity is evident in brain regions including the fusiform gyrus, parahippocampal gyrus (involved in perception and memory systems; Baumann & Mattingly, 2016) and the cuneus (responsible for the integration of somatosensory information with other sensory stimuli, as well as attention, learning and memory; Price, 2000). The researchers claim that this is evidence of distinct networks for cognitive and affective empathy.

Cox and Colleagues (2012) assessed the difference in brain structures between cognitive-dominant and affective-dominant participants (as measured by the difference between cognitive and affective empathy scores on the interpersonal reactivity index – a measure of empathy; Davis, 1983). Affective empathy was

associated with stronger neural connectivity among areas of the brain involved in social-emotional processing (i.e. insula, amygdala, orbitofrontal cortex, perigenual anterior cingulate). This is compared to people who were dominant in cognitive empathy, who displayed stronger neural connections in areas associated in internal understanding of the body, self-monitoring and social-cognitive processing (i.e. the brainstem, superior temporal sulcus, ventral anterior insula).

Disgust and Empathy

Wicker and colleagues (2003), as well as Jabbi, Swart and Keysers (2006) conducted separate studies which both found that the anterior insula and the adjacent frontal operculum (jointly referred to as the IFO; Phillips et al., 1997) were activated during exposure to disgusting tastants (a chemical which stimulates the sense of taste), as well as when watching other people who are experiencing disgust. Their study found that when participants were viewing other disgusted facial expressions, they could predict the activation of participant IFO via their empathy scores. The study concluded that the IFO contributes to empathy by its ability to map feelings of another into the individual's internal state, findings which are especially evident for the emotion of disgust. This makes it likely that the IFO is important for the activation of emotion, as well as having the ability to map the emotions of others, and leads observers to also experience those states (Jabbi, Swart & Keysers, 2006). This is possible evidence of disgust taking temporal precedence over empathy.

Empathy and Disgust influencing Politics

Currently a study which examines the relation between disgust and political ideologies, as well as the influence of empathy, cannot be identified. However, a study conducted by Ben-Nun Bloom (2014) depicts research which is comparable. In the study, researchers presented their participants with a story which primes feelings

of disgust (classified as a moral emotion). They then increased participant moral conviction by encouraging the consideration of harm (i.e. induce empathy) done so by telling them a story about moral issues. Participants who were primed with disgust were more likely to propose harsher moral judgement to offenders than participants in a neutrally primed condition. This suggests that disgust and empathy interact to alter pre-existing political attitudes. By taking into account the influence that empathy may have on the relationship between disgust and political attitudes, we may be able to explain why previous researchers obtained fluctuating, contradictory results. By combining the predicative ability of disgust and empathy, it may be possible to devise a more robust predictor of political attitudes.

Aims and Hypothesis

The current research is interested in the possibility of creating a more reliable predictor of political attitudes by combining the predictive ability of disgust and empathy. It is thought that by including empathy as a variable which facilitates the relationship between disgust and political attitudes, that we may be better able to predict ideologies, and as a result, comprehend the discrepancies found previously in this area of research. That is, we may be able to reveal a multifaceted relation, and demonstrate that disgust is not an element which solely influences/forecasts political viewpoints as previous researchers have thought. Therefore, the current research aim is to determine whether having high levels of empathy mediates the relationship between disgust sensitivity and political ideology. That is, having high levels of disgust sensitivity may not predict conservative ideologies, if the individual is also high in empathy. In this case, regardless of high disgust sensitivity, individuals high in empathy may hold more liberal (rather than conservative) beliefs.

It is also the aim to establish whether there is an enhanced ability to explain political ideology through disgust when assessing affective and cognitive empathy separately, and whether there are any differences between the predictive ability between the two types. Though there are differences between affective and cognitive empathy (i.e. brain structures, function, previous research), researchers have confirmed that both are related to political ideologies. Therefore, it is likely that by evaluating affective and cognitive empathy independently, both will result in a significant mediation. Two hypotheses were developed in order to assess the unexplored relationships which may contribute to our understanding of the individual development of political ideologies:

Hypothesis 1 (H1): cognitive empathy will mediate the relationship between disgust sensitivity and political ideology, that is:

a) Individuals high in disgust sensitivity and low in cognitive empathy are more likely to have conservative political ideologies, as compared to;
b) Individuals high in disgust sensitivity as well as possessing high levels of cognitive empathy who are more likely to have liberal political ideologies

Hypothesis 2 (H2): affective empathy will also mediate the relationship between disgust sensitivity and political ideology, that is:

a) Individuals high in disgust sensitivity and low in affective empathy are more likely to have conservative political ideologies, as compared to;
b) Individuals high in disgust sensitivity as well as possessing high levels of affective empathy who are more likely to have liberal political ideologies

Method

Participants

Participants were selected on the basis that they were over the age of 18 years, and were students enrolled in the unit KHA106, Brain, Mind and Emotion at the University of Tasmania, across both Launceston and Hobart campuses. Students were asked to participate in the current research as part of their coursework module on the topic of motivation and emotions. Students were all given the opportunity to include their data in the current study. A total of 202 students logged onto the survey website. Two participants were excluded as they responded in an unlikely fashion (i.e. participant answered '1' to every question on the Likert scales, despite item reversal). A further two participants' data was excluded as they failed to complete the DS-R. After excluding the data from participants who did not want to be included (n = 28), a total of 170 participants' data was retained. Table 1 depicts the demographic data for all participants.

Table 1

Demographic Data for Participants

Characteristic	*N* = 170 (100%)
Sex	
Female	139 (82%)
Male	30 (17%)
Rather Not Say	1 (1%)
Age	
Mean (*SD*)	23.60 (8.58)
Ethnicity	
Caucasian	150 (88%)
Other	20 (12%)
Highest Level of Completed Education	
High School/TAFE/College	157 (92%)
Bachelor	11 (7%)
Masters/PhD	2 (1%)
Native Language	
English	155 (91%)
Other	15 (9%)
Religious	
No	125 (74%)
Yes	45 (26%)
Christian (including Catholic and Anglican)	40 (89%)
Other	5 (11%)
Religiosity Strength (0-10)	
Mean (*SD*)	2.27 (3.07)

Materials

The Disgust Scale – Revised (DS-R; Olatunji et al., 2007): The Disgust Scale – Revised was used in order to measure participant levels of disgust sensitivity. The DS-R is a two-part measure consisting of 25 items (13 in the first section, 12 in the second). Items assess disgust sensitivity in line with a three-factor structure: core disgust (12 items), animal-reminder disgust (8 items) and contamination-based disgust (5 items). Items in part one of the scale require a true/false response (i.e. 'it would bother me tremendously to touch a dead body'). In part two, participants are required to rate how disgusting they believe each experience would be as either; 'not', 'slightly' or 'very' disgusting (i.e. 'you see a man with his intestines exposed after an accident'). A score of 25 reflects the highest measurable score on the DS-R and reveals an extremely high disgust sensitivity, while a score of 0 reflects no disgust sensitivity (Olatunji et al., 2007). This version of the scale has adequate Cronbach's α estimate of .84, and a split-half coefficient of .76 (Olantunji et al., 2007).

Basic Empathy Scale in Adults (BES-A): To measure participant empathy levels, the Basic Empathy Scale in Adults (Carrè et al., 2013) was administered. The scale consists of 20 items which aligns to a two-factor model of empathy (cognitive and affective empathy). The affective empathy subscale contains 11 items (i.e., 'I don't become sad when I see other people crying'). The cognitive subscale contains 9 items (i.e., 'I can understand how people are feeling even before they tell me'). Items are responded to on a 5-point Likert scale ranging from 1 = strongly disagree, to 5 = strongly agree. Lower scores represent a deficit in empathy and higher scores represent a highly developed level of empathy. The two subscales' scores range from 11 - 55 for affective empathy, and 9 - 45 for the cognitive empathy subscale. The

test-retest reliability coefficients are adequate for both the affective and cognitive subscales, with significant relations (Carrè et al., 2013).

Australian Political Ideology Scale (APIS): Despite a thorough literature review, a current measure of Australian political ideology was not found. Therefore, Brenner and Inbar's (2014) measure of political attitudes in the Netherlands was modified for use in an Australian population. Items were developed based upon the issues currently considered relevant in the Australian political climate. These were identified through recent/relevant news articles, Australian Broadcasting Corporation's (ABC) 'Compass' webpage and Vote Compass tool. This tool assesses political views using a large survey and aligns them to the ideals of the local political parties' members (ABC, 2016). The final scale, referred to as the Australian Political Ideology Scale (APIS; Appendix A), consisted of 39 items (15 of which are reversed), which were measured on a 5-point Likert Scale ranging from 1 (totally disagree), to 5 (totally agree), with lower scores indicative of a more liberal ideology. The APIS comprised of six subscales:

'Immigration and Islam' contained 11 items measuring attitudes towards immigration and Islam (i.e. "immigrants take the local's jobs"). 'Sex and sexual preference' contained eight items which measured attitudes around sex and sexual orientations (i.e. "same-sex marriage should be legalised"). 'Indigenous Australia' contained five items which measured attitudes towards issues concerning Indigenous peoples (i.e. "the date of Australia Day should be changed out of respect for Indigenous peoples"). 'Sexism' contained five items which evaluated attitudes towards sexism (i.e. "men are better in their work than women"). 'Finance and Business' consisted of five items which gaged attitudes around finance and business issues in Australia (i.e. "the minimum wage should be raised"). 'Foreign

Intervention' consisted of five items which assessed attitudes towards Australia's involvement in foreign intervention (i.e. "Australia should take their troops out of Syria"). Homogeneity of reliability analysis found the scale had a Cronbach's α of .91 and a Spearman Brown split half unequal length reliability coefficient of .93 (Appendix B) indicating good reliability (Gregory, 2011).

Procedure

Ethical approval was obtained from the University of Tasmania Human Ethics Committee (see Appendix C). Participants were asked to voluntarily log onto the online survey as part of an undergraduate unit's self-directed practical activity. Participants read an information sheet (Appendix D) and completed a consent form (Appendix E), where they could choose whether they wished to include their data in the final analysis. Following this, demographic information was collected (Appendix E), including age, sex, ethnicity and education level. As research has shown a correlation between religiosity and conservatism (i.e. Kelly & Morgan, 2005), we collected data on religion type and strength of religion belief. Participants then completed the APIS, followed by the BES-A and lastly the DS-R. This order was chosen so as to avoid any elicitation of disgust feelings which may have influenced responses.

Results

Data Screening

The data set was analysed for outliers by reviewing box-plots. Two outlying data points (one extremely low score on the BES-A, one high score from the DS-R) were assigned the score of one unit above or below the next most extreme score in the distribution, a procedure outlined by Tabachnick and Fidell (2001). All assumptions of the analysis were considered (i.e. normality, multicollinearity,

homoscedasticity, independence, linearity) and it was determined that the data set met the necessary requirements. For the following analyses alpha levels were maintained at a level of $\alpha = 0.05$ using two-tailed significance. Cohen's *d* effect sizes will be interpreted as 0.2 (small), 0.5 (medium), and 0.8 (large) as outlined by Cohen (1988).

In relation to demographic differences of the scale scores (for values and interpretation see Appendix F, for output see G), the current sample found a significant difference between sexes on the DS-R. Males had moderately greater disgust sensitivity than females, a result inconsistent with previous findings (i.e. Brenner & Inbar, 2014; Haidt, McCauley, & Rozin, 1994). All other demographics acted as expected on the DS-R. For the BES-A, all demographic variable differences were as expected. A correlation analysis between the affective and cognitive subscales of the BES-A was significant (Appendix H). This relationship is of moderate strength, inferring that the subscales should not be impacted on by possible multicollinearity effects.

For the APIS, there was a significant difference between ethnicities, with Caucasians having more liberal scores on the APIS compared to other ethnicities. This represented a small to moderate effect. These findings were unexpected, as it is common for ethnic minorities to favour parties which favour change and accept differences. There was also a significant correlation between measurements of participant religiosity and APIS scores, meaning that as participant level of religiosity increased, so too did their level of conservatism. Due to this result, religiosity strength included as a covariate in the mediation model to control for the relationship (Appendix I). Table 2 shows the mean scores, standard deviations,

range, and 95% confidence intervals around the mean for measures employed (see Appendix I for the SPSS output).

Table 2

Participants' Scores on each Scale Assessed According to the Mean, Standard Deviation (SD), Range, and the 95% Confidence Intervals around the Mean

Scale	Mean	*SD*	Range	95%CI for Mean
DS-R	12.25	2.21	7-20	11.92 - 12.58
BES - Affective	40.68	6.87	18-55	39.64 - 41.72
BES - Cognitive	35.11	4.45	21-45	34.43 - 35.78
APIS	86.67	17.52	49-130	84.02 - 89.32

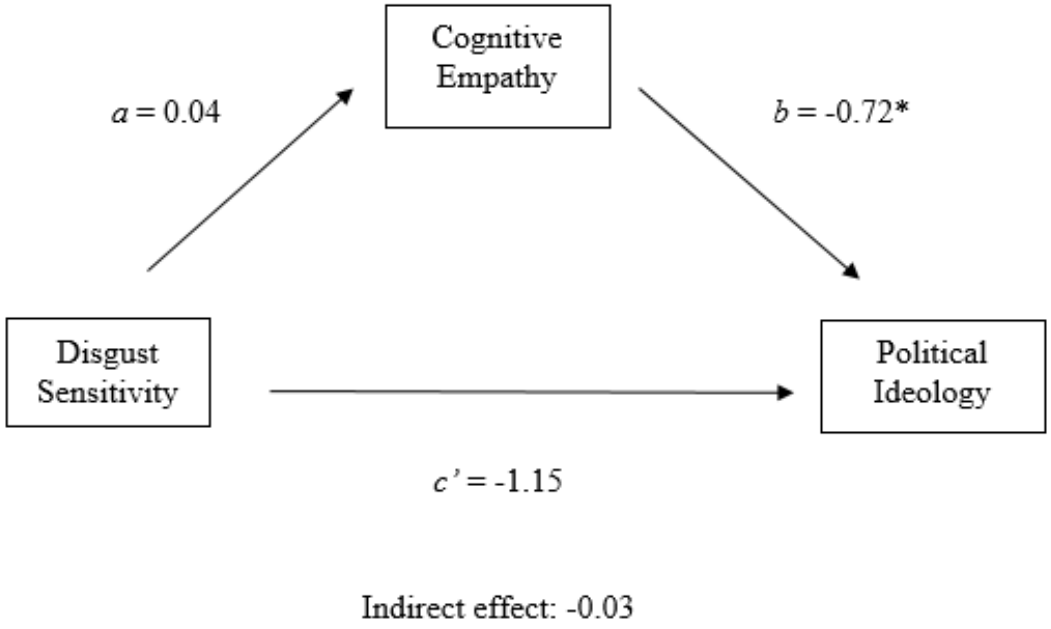
Data Analysis

Using SPSS version 23.0 with the PROCESS add-on (Hayes, 2013), two mediation analyses were performed. Mediation is a method used to investigate the underlying mechanisms in specific relationships. In this case, the mechanism underlying the relationship between disgust (predictor variable) and political ideology (outcome variable), is predicted to be empathy (mediator variable). Using bootstrapping methods of 5000 samples, and bias-corrected 95% confidence intervals (BCa 95% CI), indirect effects were estimated. Confidence intervals of 95% were bias-corrected as bootstrapped distributions are not equal across estimates of the indirect effect. A significant mediation is indicated by a 95% confidence interval

which does not contain zero (Preacher & Hayes, 2008). Hayes (2013) explains that when a mediation model includes a covariate, regular effect size outputs (i.e. κ^2; Preacher and Kelley, 2011) are suppressed as they cannot take into account the effects of the covariate. In this case, Hayes recommends using the completely standardised indirect effect, which gauges the indirect effect relative to variation in the outcome and predictor variable, while controlling for the covariate, and is interpreted based on standard deviation change in the outcome variable.

Mediation Analyses

Before including mediator variables in the model, the relation between disgust and political orientation was significant, b = -1.18, p = .049, *95%CI* [-2.34, -.01]. From a simple mediation analysis conducted using ordinary least squares regression analysis, disgust sensitivity levels did not indirectly predict political ideology through cognitive empathy levels. As can be seen from Figure 1 and Table 3, a non-significant result showed participant disgust sensitivity did not contribute to cognitive empathy. Participants who possessed higher levels of cognitive empathy, had more liberal ideologies (b = -0.72). The confidence interval for the indirect effect (*ab*) contained zero [-.31, .19], meaning that cognitive empathy did not act as a mechanism to help explain the relationship between disgust and ideologies. With the inclusion of cognitive empathy in the model, disgust sensitivity levels did not influence political ideology, although this approached significance (c'= -1.15, p = .050). The impact of the covariate, strength of religious belief, was also significant in the model b = 1.33, p =.002, 95%CI [0.50, 2.16] (Appendix K).



Note. Values marked with asterisks are indicative of a significant relationship as the 95% confidence intervals do not cross zero.

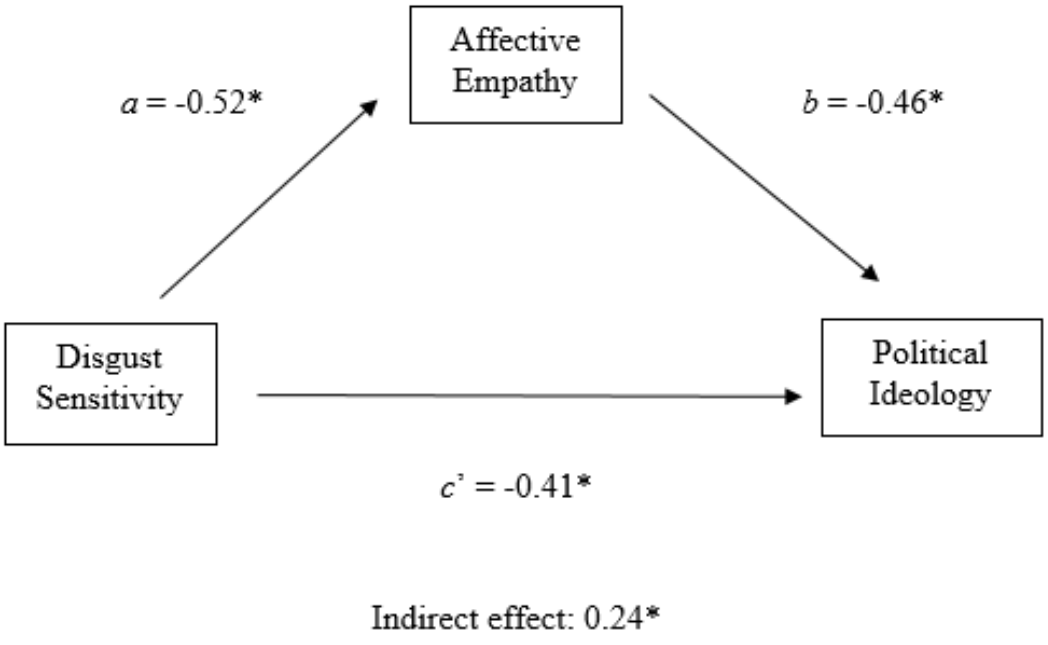
Figure 1. Simple mediation model of cognitive empathy as a mediator on the relationship of disgust sensitivity and Australian political ideology.

Table 3

Model Coefficients for the Mediation Including Affective Empathy

		M (Cognitive Empathy)				Y (Political Ideology)		
		Coeff.	*SE*	*p*		Coeff	*SE*	*p*
X(Disgust)	a	0.04	0.16	.814	c'	-.1.14	0.58	.050
M(Cognitive)		-	-	-	b	-0.718	0.29	.015
Constant	i_1	34.36	1.95		i_2	122.90	12.39	<.001
		$R^2 = 0.01$				$R^2 = 0.10$		
		$F(2,167) = 0.69$, $p = .502$				$F(3,166) = 6.32$, $p < .001$		

A second mediation analysis was conducted using ordinary least squares regression analysis, with affective empathy included as the mediator. In this model, disgust sensitivity levels indirectly predicted political ideology through affective empathy levels. As can be seen from Figure 2 and Table 4, participant with high disgust sensitivity levels also possessed lower levels of affective empathy (a = -0.52). Participants who possessed higher levels of affective empathy, had more liberal ideologies (b = -0.46). The confidence interval for the indirect effect (ab) was above zero [.001, .095]. There was also evidence that disgust sensitivity levels influenced political ideology independent of its effect on empathy (c'= -1.17, p = .049), thus indicating mediation. The impact of the covariate, strength of religious belief, was also significant in the model b = 1.33, p =.002, 95%CI [.50, 2.16] (Appendix L).



Note. Values marked with asterisks are indicative of a significant relationship as the 95% confidence intervals do not cross zero.

Figure 2. Simple mediation model of affective empathy as a mediator on the relationship effect of disgust sensitivity on Australian political ideology.

Table 4

Model Coefficients for the Mediation Including Affective Empathy

		M (Affective Empathy)				Y (Political Ideology)		
		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X(Disgust)	a	-0.52	0.24	.028	c’	-.1.41	0.59	.018
M (Affective)		-	-	-	b	-0.456	0.19	.018
Constant	i_1	46.57	2.96		i_2	119.48	11.55	<.001
		$R^2 = 0.04$				$R^2 = 0.10$		
		$F(2,167) = 3.30$, $p = .039$				$F(3,166) = 6.17$, $p = .005$		

Discussion

The current study hypothesised that having high levels empathy would mediate the relation between disgust and political ideology. It was intended to determine whether including empathy (either affective or cognitive) in two mediating models would significantly enhance ability to predict ideologies from disgust scores. Results support the prospect of a more complex association between disgust sensitivity and political ideology – indicated by the significant partial mediation effect of affective empathy. However, results failed to reveal a mediation effect of cognitive empathy. These findings are further discussed below.

Hypothesis 1

Our first hypothesis, that cognitive empathy would mediate the relationship between disgust sensitivity and political ideology, was not supported. This means

that adding cognitive empathy in the model did not help to further explain the association between disgust and political ideologies. This result infers that cognitive empathy is not a mechanism which helps to explain the association between disgust sensitivity and political ideology. It is possible that this result reflects the independence of cognitive empathy and disgust (both theoretically and neurologically; Moll et al., 2002; Lane et al., 1997; Nummenmaa et al., 2008; Cox et al., 2012).

The association between disgust sensitivity and cognitive empathy was non-significant. This shows that disgust sensitivity did not seem to impact on cognitive empathy. That is, even if individuals have a high disgust sensitivity, these levels do not seem to increase/decrease cognitive empathy. Although not directly related to the hypothesis, it is noteworthy that the results of the model show that higher levels of cognitive empathy are related to the adoption of more liberal ideologies – an expected finding, confirming results outlined in previous literature (Falk & Johnson, 1977; Kalliopuska, 1983; Leith & Baumeister, 1998; Todd, Bodenhausen, Richeson & Galinsky, 2011).

Furthermore, although a significant relation was found between disgust and political orientation before adding cognitive empathy into the model, disgust sensitivity no longer predicted political ideology once cognitive empathy was included. This may indicate a stronger influence of cognitive empathy (as compared to DS) in that it results in a non-significant relation between disgust and political ideology. This suggests that once cognitive empathy is taken into consideration, disgust sensitivity may no longer have a meaningful impact on political ideology. However, further analysis is needed to confirm this finding. This may be plausible, due to the findings of previous literature. That is, cognitive empathy is related to a

variety of ideologies and attitudes (Falk & Johnson, 1977; Kalliopuska, 1983; Leith & Baumeister, 1998; Todd et al, 2011; Mencl & May, 2009).

Hypothesis 2

The second hypothesis, that affective empathy would mediate the relationship between disgust and political ideology, was supported. It was found that affective empathy partially mediated the model. The relationship was positive, meaning that as empathy increases attitudes tend to be more liberal - despite sensitivity to disgust. The size of this mediation effect is small however, meaning that there was a small increase in ability to predict political ideologies from disgust scores by adding affective empathy into the model.

There is a significant negative relationship between disgust sensitivity and affective empathy. That is, having high disgust sensitivity is associated with also possessing lower levels of empathy. This finding is in line with previous research which has shown high levels of disgust lead to more social prejudice, and social conservatism which reflect low levels of empathy (Inbar et al., 2009; Inbar et al., 2012; Joliffe & Farrington, 2006; Terrizzi Jr et al., 2010).

The relationship between affective empathy and political ideology is significant, and again negative. This finding indicates that having higher levels of affective empathy leads to liberal voting patterns and supports what was hypothesised based on previous research (Falk & Johnson, 1977; Kalliopuska, 1983; Leith & Baumeister, 1998; Todd et al, 2011). These liberal views likely develop as a result of highly emotional responses to certain circumstances, information, or stories. Therefore, leading these individuals to vote in a way which aims for equality-based, liberal outcomes.

The effect of disgust sensitivity on political ideology while controlling for affective empathy was also significant. Contrary to previous literature, the relationship of this direct effect was negative, with higher disgust sensitivity being associated with more liberal ideologies. This does not reflect what was predicted based on previous literature, as studies show innate disgust sensitivity as a significant predictor of conservatism (Inbar et al., 2009; Inbar et al., 2012). Similarly, Terrizzi, Shook, and Ventis (2010) ran two experiments, one where they measured participants' innate disgust levels and another where they induced disgust. Both experiments found an ability to predict conservative ideologies from disgust sensitives. By inducing the feeling of disgust, there was a greater effect of disgust predicting conservatism as compared to controls.

Implications

The current study illustrated that disgust significantly influences the development of politically conservative beliefs. However, our results also show that this relationship changes as a result of including empathy into the model. That is, the results show that affective and cognitive empathy change the way disgust and political ideologies relate to each other. It was found that affective empathy had a partial mediating effect on the relationship between disgust sensitivity and political ideologies, while cognitive empathy did not. High levels of affective empathy attenuated the effect of disgust sensitivity, leading to an increase of liberal ideologies. Finding this mediation effect is likely a result of the biological and theoretical emotion based relationship that both disgust and affective empathy share. That is, that the structures of the brain required to produce them are interconnected, and both are responsible for creating emotion based responses (Cox et al., 2012; Lane et al., 1997; Moll et al., 2002; Nummenmaa et al., 2008). Therefore, it is likely

they interact during decision making processes. The relationship between these two variables may be stronger than the relation between disgust and cognitive empathy, which relies upon different brain networks and is much more perception-based.

Though cognitive empathy did not show a mediation effect, it did present some interesting findings. The lack of mediation effect is likely a result of the insufficient relation between disgust and cognitive empathy, a factor necessary for a mediation analysis. However, the mediation model including cognitive empathy results in a non-significant relationship between disgust and political ideologies, and a significant effect of cognitive empathy on political ideology. This finding may indicate that cognitive empathy has such a strong impact on the relationship that it diminishes the ability to use disgust as a predictor of political ideologies. This may be likely as Mencl and May (2009) found a greater effect of cognitive empathy, than affective empathy, in predicting individual intention to act morally, as well as predicting moral-orientated judgements. However, no concrete conclusions can be drawn about this without further analyses.

Furthermore, humans use two modes of thinking; fast and slow (Kahneman, 2011). Kahneman (2011) explains that the fast system is characterised by the use of heuristics (i.e. mental shortcuts) to inform judgements, while the slow system requires a considerable amount more mental effort, and filters through evidence to draw conclusions. Stoker and colleagues (2015) state that many people rely on this fast thinking regularly in life, and it almost always guides the daily decision making process. This is especially true when individuals begin to understand and form opinions of certain political ideas (Stoker et al., 2015). Research also shows that induction of emotions, particularly those with a negative salience, can lead to a change in political views (Way & Masters, 1996). Emotions are elicited

automatically, and the strength often cannot be controlled (Fellous et al, 2002), hence it is believed that emotion takes the fast processing system (Damasio, 1994).

Affective empathy is the feeling component of empathy, and so it is heavily grounded in emotion. It is likely that affective empathy takes the fast processing system as a result (Damasio, 1994). In comparison, cognitive component of empathy takes a complex appraisal path, considers possible outcomes and reflects upon different perspectives – like the slow processing system. The cognitive process is slower and requires more mental effort (Ochsner, Bunge, Gross, & Gabrieli, 2002). The aforementioned makes it likely that people often make decisions regarding politics in a quick, emotive manner. Hence, it is likely that individuals adopt their political attitudes based on heuristics such as ease of processing. If this is the case, people high in affective empathy may guide their decisions based on their emotional response to political issues, rather than systematically processing all aspects. The current study provides evidence of this via the mediation effect of affective empathy between disgust and political attitudes, providing support for the ecological validity of our study.

For example, individuals may make decisions based on emotion-provoking stories, leading individuals who rely on emotion based heuristics to be more easily swayed (Hunt, Ergun, & Federico, 2008) by political advertising. This is in contrast to people who take time to process all available information, and are likely to use the required level of cognitive effort to make considered decisions (Kahneman, 2011). This concept is explained by dual processing models such as the heuristic-systematic model of information processing (Chaiken & Trope, 1999). It is thought that political attitudes developed based on these emotional heuristics may lack stability, may be easily altered, and may be heavily influenced by the media and other emotion-

provoking information (Hunt, Ergun, & Federico, 2008). For instance, if two opposing emotive stories are presented in the media, it is probable that people who utilize the emotion processing heuristic may alter their opinions between the two attitudes based on the information which draws the strongest emotive response. Therefore, using cognitive effort as a mechanism to explain the relation between disgust and political ideals may not be efficacious, due to the lack of association the concepts shares with the emotion of disgust.

Research also indicates that politically informed individuals have greater emotional responses to political messages due to the level of knowledge needed to understand such ideas (Almohammad, 2016). This may explain why cognitive empathy reduced the effect of disgust in the mediation model. That is, people high in cognitive empathy are more likely to regularly engage the slow information processing system. People who regularly use the slow processing system are likely to have formed stable opinions around political ideals. Therefore, cognitive empathy may be a more reliable predictor of political ideologies. That is, there is a stronger relationship between cognitive empathy and political ideologies, than disgust and political ideologies.

Limitations

The current study explicitly assessed the two components of empathy. Results provide further evidence of the dissimilarity between cognitive and affective empathy, especially in how the concepts relate to disgust and ideologies. It is possible that it would have been a better option to run a mediation on the affective component, and a moderation using the cognitive component. In order to run a mediation, it is recommended that the predictor and mediator variables are related (Hayes, 2013). As results of the current research found a lack of association between

cognitive empathy and disgust, a moderation would have better examined the relation.

A possible limitation is that data collection was completed online. This meant that we are unable to ensure that a high level of effort was maintained from the participants, nor were we able to control for extraneous factors such as noise or distractibility which may have influenced scores. However, given that it is likely the majority of political decisions are a result of fast, emotion based decisions which do not require complex cognitive effort (Damasio, 1994; Kahneman, 2011; Way & Masters, 1996) these factors may not largely influence the scores.

There are also limitations which specifically relate to the use of the APIS. The scale is yet to be factor analysed or assessed for validity, though there was a good distribution of scores (indicating a broad range of attitudes was captured). Therefore, despite the promising reliability coefficients it is extremely important to interpret the results of this study with caution. Even though our study found no differences in political ideologies across age or gender, previous researchers have (Blee, 1985; Campbell & Childs, 2013; Cornelis, Van Hiel, Roets, & Kossowska, 2008). Thus, it may be a limitation to the study that we had a female-majority sample with a median age of 19 years. Similarly, the sample consisted solely of Tasmanian residents. Consequently, participants of the sample may have differing opinions on certain issues compared to people living elsewhere in the country. Furthermore, due to comments made by some younger participants, it may be likely they have not yet formed stable opinions around the political scale items (in particular, those around finance and business).

An unequal distribution of males and females in the sample may also explain why higher levels of disgust sensitivity were found for males in the current study. This finding opposes results found by the majority of researchers as typically females possess higher disgust sensitivity (Brenner & Inbar, 2014; Haidt, McCauley, & Rozin, 1994; Terrizzi Jr et al., 2010). This may provide evidence that the men of the current sample may not hold disgust sensitivities which are representative of those possessed by the majority of males.

It was unexpected to find differences in scores on the APIS according to ethnic group. It was especially interesting to see that Caucasians had more liberal ideologies. It is often found that migrants tend to vote for parties who favour diversity and change (i.e. liberal; Jacobs, Teney, Rea & Delwit, 2016). Conservatism is often seen as damaging to the preservation of Asian ideals (Wang, 1998). However, the skew may have also reflected the beliefs upheld from participant originating country. Wang (1998) noted that some Asian cultures tend to be more traditional, and therefore perhaps more conservative.

Future Research

As aforementioned, it is recommended that a moderation analysis or other approach may be needed to assess the relationship between disgust and cognitive empathy, and their impact on political ideology. Results indicate that once cognitive empathy was included in the model, disgust no longer related to political ideologies. Given this, it would be interesting to assess whether eliciting cognitive empathy in the Australian population (i.e. via the media or political campaigns) would take precedence over disgust to predict ideologies. That is, people who are high in disgust may tend to favour more liberal ideas if we are able to manipulate and increase levels of cognitive empathy.

As cognitive empathy impacts on political decisions, it may be necessary for future researchers to find a way to activate the slow processing system on large scale levels. This will allow deeper processing of information and will enhance comprehension of complex arguments, possibly resulting in more liberal attitudes. Similarly, if researchers/politicians can increase levels of empathy, they are able to alter attitudes of people who are high in disgust sensitivity, to vote liberally. Evidence shows that quick, emotive decisions often guide political attitudes (Stoker et al., 2015). Political attitudes are also believed to be more malleable when they are a result of fast processing systems (Hunt, Ergun, & Federico, 2008). Because of this, it may be of use to target cognitive empathy as part of an ongoing, long-term goal for political parties. In the short term (i.e. leading up to elections) political campaigns which use emotion-arousing arguments may be more effective to encourage last minute changes to political views.

Similarly, it would also be of interest to induce both disgust and cognitive empathy to see whether the high levels of cognitive empathy supersede the effects of the disgust manipulation. Namely, eliciting both cognitive empathy and disgust may reveal that regardless of disgust level, cognitive empathy results in liberal attitudes. If it is determined in later studies that cognitive empathy does significantly impact on the political decisions people make, the next task will be to determine how to enhance individuals' ability to sustain the cognitive effort, commitment and time required to activate the slow processing path (Kahneman, 2011).

It may be of use to control for anxiety levels in future studies, as some researchers have found that having high levels of disgust sensitivity is a correlate of anxiety (Olatunji & Sawchuck, 2005). It is possible that this will help to further explain the variance associated with political ideologies. Research proposes that

disgust activates the behavioural immune system, which in turn leads to avoidance of disgust cues. It is likely that the possession of high anxiety would lead to the same avoidances but with a greater intensity. That is, anxiety may lead to a greater adoption of conservatism, in that it may surpass the effects that empathy has on the adoption of liberal ideologies.

It may also be of interest to track the changes in political ideologies over time. This may indicate whether the scores on the scale are representative of stable beliefs, or subject to trending media issues or even emotionally-manipulative political campaigns (i.e. possibly guided by affective empathy processing heuristics). Based on the current findings, it may also be of interest to see whether people with more liberal views have higher cognitive empathy relative to their emotional empathy, and thus do not rely on emotional heuristics as much as those high in affective empathy.

Conclusions

The current study aimed to determine whether having high levels of empathy (either cognitive or affective) mediated the relationship between disgust sensitivity and political ideology. It was hypothesised that both affective and cognitive empathy would mediate the relationship. It was found that affective empathy partially mediated the association, while cognitive empathy did not. The results contribute evidence of the importance of emotion and the role it plays in the development of these influential beliefs. This may be explained via the biological and theoretical emotion based relationship that both disgust and affective empathy share. That is, that the structures of the brain required to produce them are interconnected, and both are responsible for creating emotion based responses. Therefore, the relationship between these two variables may be stronger than between disgust and cognitive

empathy which relies upon perception/decision making neural networks. Though a mediation effect was not established by cognitive empathy, the results propose that the inclusion of cognitive empathy resulted in a non-significant relation between disgust and political ideologies, and a significant effect of cognitive empathy on ideologies.

We have shown that both cognitive and affective empathy act as mechanisms which lead to a greater understanding of the association between disgust sensitivity and ideologies. It is thought that this affective-based relation may result in an over reliance on heuristics such as ease of processing. It is also believed that political attitudes developed based on these heuristics are likely to be less stable (Hunt, Ergun, & Federico, 2008). This is illuminated by dual processing models such as the heuristic-systematic model of information processing (Chaiken & Trope, 1999). It is proposed that cognitive empathy may in fact pose a large contribution to explaining ideologies, however these conclusions cannot be drawn until further analyses are conducted. Thus, future research should aim to re assess the components of empathy using mediation and moderation models, confirm the validity and generalisability of the APIS and also assess whether there are any other potential mechanisms which influence empathy, or influence the association between disgust and political orientations.

References

Alford, J. R., Funk, C. L., & Hibbing, J. R. (2005). Are political orientations genetically transmitted? *American Political Science Review, 99,* 153–167. doi: 10.1017/S0003055405051579

Allred, K. G., Mallozzi, J. S., Matsui, F., & Raja, C. P. (1997). The influence of anger and compassion on negotiation performance. *Organizational Behavior and Human Decision Processes, 70,* 175-187. doi:10.1006/obhd.1997.2705.

Almohammad, A. H. (2016). Toward a theory of Political Emotion Causation. *Sage Open, 6,* 1-23. doi: 10.1177/2158244016662106

Ang, R. P., & Goh, D. H. (2010). Cyberbullying among adolescents: The role of affective and cognitive empathy, and gender. *Child Psychiatry and Human Development, 41,* 387-397. doi:10.1007/s10578-010-0176-3

Australian Broadcasting Corporation. (2016). *Compass*. Retrieved from http://www.abc.net.au/compass/

Australian Broadcasting Corporation. (2016). *Vote Compass*. Retrieved from https://votecompass.abc.net.au/

Baron, R. M., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182. Retrieved from http://www.sesp.org/files/The%20Moderator-Baron.pdf

Baumann, O., & Mattingley, J. B. (2016). Functional organization of the parahippocampal cortex: Dissociable roles for context representations and the

perception of visual scenes. *Journal of Neuroscience, 36,* 2536-2542. doi:10.1523/JNEUROSCI.3368-15.2016

Batson, C. D. (2009). These things called empathy: Eight related but distinct phenomena. In J. Decety & W. Ickes (Eds.), *The Social Neuroscience of Empathy* (pp. 3–15). Cambridge: MIT press.

Batson, C. D., Chang, J., Orr, R., & Rowland, J. (2002). Empathy, attitudes, and action: Can feeling for a member of stigmatized group motivate one to help the group? *Personality and Social Psychology Bulletin, 28*, 1656-1666. doi:10.1177/014616702237647

Ben-Nun Bloom, P. (2014). Disgust, harm and morality in politics. *Political Psychology, 35,* 495-513. doi:10.1111/pops.12053

Blee, K. M. (1985). Mobility and political orientation: An analysis of sex differences. *Sociological Perspectives, 28,* 385-400. doi:10.2307/1389153

Brenner, C. J., & Inbar, Y. (2014). Disgust sensitivity predicts political ideology and policy attitudes in the Netherlands. *European Journal of Social Psychology, 45,* 27-38. doi:10.1002/ejsp.2027

Campbell, R., & Childs, S. (2013). 'To the left, to the right' representing conservative women's interests. *Party Politics, 21,* 626-637. doi: 10.1177/1354068813491536

Carr, L., Iacoboni, M., Dubeaut, M. C., Mazziotta, J. C., & Lenzi, G. L. (2003). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. *Proceedings of the National Academy of Sciences, 100*, 5497–5502.

Carrè, A., Stefaniak, N., D'Ambrosio, F., Bensalah, L., & Besche-Richard, C. (2013). The Basic Empathy Scale in Adults (BES-A): Factor structure of a revised form. *Psychological Assessment, 25*, 679-691. doi: 10.1037/a0032297

Chaiken, S., & Trope, Y. (1999). *Dual-process theories in social psychology*. New York: Guilford Press.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cornelis, I., Van Hiel, A., Roets, A., & Kossowska, M. (2008). Age differences in conservatism: Evidence on the mediating effects of personality and cognitive style. *Journal of personality, 77,* 51-88. doi: 10.1111/j.1467-6494.2008.00538.x

Cox, C. L., Uddin, L. Q., Martino, A. D., Castellano, F. X., Milham, M. P., & Kelly, C. (2012). The balance between feeling and knowing: Affective and cognitive empathy are reflected in the brain's intrinsic functional dynamics. *Social Cognitive and Affective Neuroscience, 7*, 727–737. doi: 10.1093/scan/ nsr051

Crawford, N. C. (2014). Institutionalizing passion in world politics: Fear and empathy. *International Theory, 6*, 535-557. doi: 10.1017/S1752971914000256

Curtis, V., & Biran, A. (2001). Dirt, disgust, and disease: Is hygiene in our genes? *Perspectives in Biology and Medicine, 44*, 17-31. doi:10.1353/pbm.2001.0001

Damasio, A. R. (1994). *Descartes' error: Emotion, reason, and the human brain.* New York, NY: G. P. Putnam's Sons.

Darwin, C., Ekman, P., & Prodger, P. (1998). *The expression of the emotions in man and animals*. London: Harper Collins Publishers.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44,* 113-126. doi: 10.1037/0022-3514.44.1.113

De Wied, M., Maas, C., van Goozen, S., Vermande, M., Engles, R., Meeus, W., … Goudena, P. (2007). Bryant's Empathy Index a closer examination of its internal structure. *European Journal of Psychological Assessment, 23,* 99-104. doi: 10.1027/1015-5759.23.2.99

Duncan, L. A., & Schaller, M. (2009). Prejudicial attitudes toward older adults may be exaggerated when people feel vulnerable to infectious disease: Evidence and implications. *Analyses of Social Issues and Public Policy, 9,* 97–115. doi: 10.1111/j.1530-2415.2009.01188.x

Ekman, P. (1982). Emotion in the human face. New York: NY, Cambridge University Press.

Falk, D. R., & Johnson, D. W. (1977). The effects of perspective-taking and egocentrism on problem solving in heterogeneous and homogeneous groups. *Journal of Social Psychology, 102,* 63–72. doi: 10.1080/00224545.1977.9713241

Faulkner, J., Schaller, M., Park, J. H., & Duncan, L. A. (2004). Evolved disease-avoidance mechanisms and contemporary xenophobic attitudes. *Group Processes & Intergroup Relations, 7,* 333-353. doi: 10.1177/1368430204046142

Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General, 113*, 464-486. doi: 10.1037/0096-3445.113.3.464

Fellous, J. M., Armony, J. L., & LeDoux, J. E. (2002). Emotional circuits and computational neuroscience. In M. Arbib (Ed.), *The handbook of brain theory and neural networks (pp. 398-401)* (2nd ed.). Cambridge, MA: Massachusetts Institute of Technology Press. Retrieved from http://www.uodiyala.edu.iq/uploads/PDF%20ELIBRARY%20UODIYALA/EL33/The%20Handbook%20of%20Brain%20Theory%20and%20Neural%20Networks.pdf

Feshbach, N. D. (1975). Empathy in children: Some theoretical and empirical consideration. *Counselling Psychologist, 5*, 25-30. doi: 10.1177/001100007500500207

Frijda, N. H. (2007). *The Laws of Emotion.* Mahwah, NJ: Lawrence Erlbaum Associates. Retrieved from http://homepages.spa.umn.edu/~larry/CLASS/NOTHING/Laws%20of%20Emotion.pdf

Gregory, R. J. (2011). Norms and Reliability. In *Psychological Testing History, Principles, and Applications* (6th ed., pp. 67-108). Boston: Pearson Education.

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral institutions that liberals may not recognize. *Social Justice Research, 20*, 98-116. doi: 10.1007/s11211-007-0034-z

Haidt, J., McCauley, C., & Rozin, P. (1994). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences, 16,* 701-713. doi: 10.1016/0191-8869(94)90212-7

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: Guilford Press.

Hein, G., & Singer, T. (2008). I feel how you feel but not always: The empathic brain and its modulation. *Current Opinion in Neurobiology, 18,* 153–158. doi: 10.1016/j.conb.2008.07.012

Hogan, R. (1969). Development of an empathy scale. *Journal of Consulting and Clinical Psychology, 33,* 307–316. doi: 10.1037/h0027580

Hunt, C. V., Ergun, D., & Federico, C. M. (2008). The relationship between affective states and the structure of political attitudes. *Psicología Política, 37,* 7-28. Retrieved from http://www.uv.es/garzon/psicologia%20politica/N37-1.pdf

Iacoboni, M. (2009). Imitation, empathy, and mirror neurons. *Annual Review of Psychology, 60,* 653-670. doi: 10.1146/annurev.psych.60.110707.163604

Inbar, Y., Pizarro, D. A., & Bloom, P. (2009). Conservatives are more easily disgusted than liberals. *Cognition and Emotion, 23,* 714-725. doi: 10.1080/02699930802110007

Inbar, Y., Pizarro, D., Iyer, R., & Haidt, J. (2012). Disgust sensitivity, political conservatism, and voting. *Social Psychological and Personality Science, 3,* 537-544. doi: 10.1177/1948550611429024

Jabbi, M., Swart, M., & Keysers, C. (2006). Empathy for positive and negative emotions in the gustatory cortex. *NeuroImage, 34,* 1744 -1753. doi: 10.1016/j.neuroimage.2006.10.032

Jacobs, D., Teney, C., Rea, A., & Delwit, P. (2016). Is it really ethnic voting? Ethnic minorities in local elections in Brussels. In A. Bilodeau (Ed.), *Just ordinary citizens? Towards a comparative portrait of the political immigrant*. Toronto: University of Toronto Press.

Jankowiak-Siuda, K., Rymarczyk, K., & Grabowska, A. (2011). How we empathize with others: A neurobiological perspective. *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research,17,* 18–24. doi: 10.12659/MSM.881324

Jolliffe, D., & Farrington, D. P. (2006). Examining the relationship between low empathy and bullying. *Aggressive Behaviour, 32,* 540-550. doi: 10.1002/ab.20154

Jost, J. T. (2006). The end of the end of ideology. *American Psychologist, 61,* 651-670. Retrieved from http://www.psych.nyu.edu/jost/Jost(2006)The-End-of-the-End-of-Ideology.pdf

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129,* 339–375. doi: 10.1037/0033-2909.129.3.339

Kahneman, D. (2011). *Thinking, fast and slow.* New York: Farror, Straus and Giroux.

Kalliopuska, M. (1983). Relationship between moral judgement and empathy. *Psychological Reports, 53,* 575-578. doi: 10.2466/pr0.1983.53.2.575

Kanazawa, S. (2010). Why liberals and atheists are more intelligent. *Social Psychology Quarterly, 73,* 33-57. doi: 10.1177/0190272510361602

Kelly, N. J., & Morgan, J. (2005). Religion and Latino partisanship in the United States. *Political Research Quarterly, 58,* 87-95. doi: 10.1177/106591290505800108

Lane, R. D., Reiman, E. <., Ahern, G. L., Schwarts, G. E., Davidson, R. J. (1997). Neuroanatomical correlates of happiness, sadness, and disgust. *American Journal of Psychiatry, 154,* 926- 933. Retrieved from http://ajp.psychiatryonline.org/doi/pdf/10.1176/ajp.154.7.926

Leith, K. P., & Baumeister, R. F. (1998). Empathy, shame, guilt, and narratives of interpersonal conflicts: Guilt prone people are better at perspective taking. *Journal of Personality, 66,* 1-37. doi: 10.1111/1467-6494.00001

McCarty, N., Poole, K. T., & Rosenthal, H. (2008). *Polarized America: The dance of ideology and unequal riches*. Cambridge: MIT Press.

Mencl, J., & May, D. R. (2009). The effects of proximity and empathy on ethical decision-making: An exploratory Investigation. *Journal of Business Ethics, 85,* 201-226. doi: 10.1007/s10551-008-9765-5

Moll, J., de Oliverira-Souza, R., Bramati, I. E., Grafman, J. (2002). Functional networks in emotional moral and nonmoral social judgements. *Neuroimage, 16,* 696-703. doi: 10.1006/nimg.2002.1118

Moore, B. S. (1990). The origins and development of empathy. *Motivation and Emotion, 14,* 75–80. doi: 10.1007/BF00991636

Moors, A. (2007). Can cognitive methods be used to study the unique aspect of emotion: An appraisal theorist's answer. *Cognition and Emotion, 21,* 1238-1269. doi: 10.1080/02699930701438061

Moors, A., Ellsworth, P. C., Scherer, K. R., & Frijda, N. H. (2013). Appraisal theories of emotion: State of the art and future development. *Emotion Review, 5,* 119-124. doi: 10.1177/1754073912468165

Nummenmaa, L., Hivonen, J., Parkkola, R., & Hietanen, J. K. (2008). Is emotional contagion special? An fMRI study on neural systems for affective and cognitive empathy. *Neuroimage, 43,* 571–580. doi: 10.1016/j.neuroimage.2008. 08.014

Oatley, K., Parrott, W. G., Smith, C., & Watts, F. (2011). Cognition and emotion over twenty-five years. *Cognition and Emotion, 25,* 1341-1348. doi: 10.1080/02699931.2011.622949

Ochsner, K. N., Bunge, S. A., Gross, J. J., & Gabriele, J. D. (2002). Rethinking feelings: An FMRI study of the cognitive regulation of emotion. *Journal of Cognitive Neuroscience, 14,* 1215-1229. doi: 10.1162/089892902760807212

Olatunji, B. O., & Sawchuk, C. N. (2005). Disgust: Characteristic features, social implications, and clinical manifestations. *Journal of Social and Clinical Psychology, 24,* 932–962. doi: 10.1521/jscp.2005.24.7.932.

Olatunji, B. O., Williams, N. L., Tolin, D. F., Abramowitz, J. S., Sawchuk, C. N., Lohr, J. M., & Elwood, L. S. (2007). The Disgust Scale: Item analysis, factor

structure, and suggestions for refinement. *Psychological Assessment, 19,* 281-297. doi: 10.1037/1040-3590.19.3.281

Olderbak, S., Sassenrath, C., Keller, J., & Wilhelm, O. (2014). An emotion-differentiated perspective on empathy with the emotion specific empathy questionnaire. *Frontiers in Psychology, 5,* 1-14. doi: http://doi.org/10.3389/fpsyg.2014.00653

Olson, L. R., Cadge, W., & Harrison, J. T. (2006). Religion and public opinion about same-sex marriage. *Social Science Quarterly, 87,* 340-360. doi: 10.1111/j.1540-6237.2006.00384.x

Park, J. H., Faulkner, J., & Schaller, M. (2003). Evolved disease avoidance processes and contemporary anti-social behavior: Prejudicial attitudes and avoidance of people with physical disabilities. *Journal of Nonverbal Behavior, 27,* 65–87. doi: 10.1023/A:1023910408854

Park, J. H., Schaller, M., & Crandall, C. S. (2007). Pathogen-avoidance mechanisms and the stigmatization of obese people. *Evolution and Human Behavior, 28,* 410–414. doi.org/10.1016/j.evolhumbehav.2007.05.008

Peto, E. (1936). Contribution to the development of smell feeling. *British Journal of Medical Psychology, 15,* 314-320. doi: 10.1111/j.2044-8341.1936.tb01156.x

Petrescu, D. C., & Parkinson, B. (2014). Incidental disgust increases adherence to left-wing economic attitudes. *Social Justice Research, 27,* 464-486. doi: 10.1007/s11211-014-0221-7

Phillips, M. L., Young, A. W., Senior, C., Brammer, M., Andrew, C., Calder, A. J., … David, A. S. (1997). A specific neural substrate for perceiving facial expressions of disgust. *Nature, 389,* 495–498. doi: 10.1038/39051

Pizarro, D., & Salovey, P. (2002). Religious systems as "Emotionally Intelligent" organizations. *Psychological Inquiry*, *13,* 220-222. Retrieved from: https://static1.squarespace.com/static/4ff4905c84aee104c1f4f2c2/t/5084d94884ae0236022c3c0e/1350883656499/Pizarro+Salovey+2003+%5Bcommentary%5D.pdf

Plutchik, R. (1980). *Emotion: A psychoevolutionary synthesis.* New York: Harper & Row.

Plutchik, R. (2001). Human emotions have deep evolutionary roots, a fact that may explain their complexity and provide tools for clinical practice. *American Scientists, 89,* 344-350. Retrieved from: http://www.emotionalcompetency.com/papers/plutchiknatureofemotions%202001.pdf

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle. B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology, 67*, 741-763. doi 10.1037/0022-3514.67.4.741

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40,* 879–89. doi:10.3758/ BRM.40.3.879

Preacher, K. J., & Kelley, K. (2011). Effect Size Measures for Mediation Models: Quantitative Strategies for Communicating Indirect Effects. *Psychological Methods, 16,* 93-115. doi: 10.1037/a0022658.

Price, D. D. (2000). Psychological and neural mechanisms of the affective dimension of pain. *Science, 288,* 1769-1772. doi: 10.1126/science.288.5472.1769

Reed, G. S. (1984). The antithetical meaning of the term 'empathy' in psychoanalytic discourse. In J. Lichtenberg, M. Bornstein, & D. Silver (Eds.), *Empathy* (pp. 7-241). Hillside, New Jersey: Lawrence Erlbaum Associates

Rosenstein, D., & Oster, H. (1988). Differential response to four basic tastes in newborns. *Child Development, 59,* 1555–1568. Retrieved from http://www.jstor.org/stable/1130670

Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review, 95,* 23-41. doi: 10.1037/0033-295X.94.1.23

Rozin, P., Haidt, J., & McCauley, C. R. (1999). Disgust: The body and soul emotion. In. T. Dalgleish & M. Power (Eds.), *Handbook of cognition and emotion* (pp. 429-445). Chichester, UK: Wiley.

Rozin, P., Haidt, J., & McCauley, C. R. (2000). Disgust. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions, 2nd Edition* (pp. 637–653). New York: Guilford Press.

Rozin, P., Haidt, J., & McCauley, C. R. (2008). Disgust. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 637–653). New York: Guilford Press.

Salazar-López, E., Domínguez, E., Ramos, V. J., de la Fuente, J., Meins, A., Iborra, O., ... & Gómez-Milán, E. (2015). The mental and subjective skin: Emotion,

empathy, feelings and thermography. *Consciousness and cognition, 34,* 149-162. doi: 10.1016/j.concog.2015.04.003

Schaller, M. (2006). Parasites, behavioural defences, and the social psychological mechanisms through which cultures are evoked. *Psychological Inquiry, 17,* 96-101. Retrieved from: http://www.jstor.org/stable/pdf/20447307.pdf?acceptTC=true

Schaller, M., & Park, J. H. (2011). The behavioural immune system (and why it matters). *Current directions in psychological science, 20,* 99-103. doi: 10.1177/0963721411402596

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgement. *Personality and Social Psychology Bulletin, 34,* 1096-1109. doi: 10.1177/0146167208317771

Sherkat, D. E., Powell-Williams, M., Maddox, G., & de Vries, K. M. (2011). Religion, politics, and support for same-sex marriage in the United States 1988-2008. *Social Science Research, 40,* 167-180. doi: 10.1016/j.ssresearch.2010.08.009

Sherman, G., Haidt, J., & Coan, J. (2007). *Nazis really are disgusting*. Unpublished manuscript, University of Virginia.

Smith, C. A., & Lazarus, R. S. (1990). Emotion and Adaption. In L. A. Previn (Ed.), *Handbook of Personality: Theory and Research* (pp. 609-637). New York: Guildford Press.

Stein, M., Ottenberg, P., & Roulet, N. (1958). A study of the development of olfactory preferences. *American Medical Association Archives of Neurology*

and Psychiatry, *80*, 264-266. doi: 10.1001/archneurpsyc.1958.02340080134028

Stoker, G., Hay, C., Barr, M. (2015). Fast thinking: Implications for democratic politics. *European Journal of Political Research, 55,* 3-21. doi: 10.1111/1475-6765.12113

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (4th Ed.) Needham Heights, Massachusetts: Allyn & Bacon.

Tagney, J. P., & Dearing, R. (2002). *Shame and guilt in interpersonal relationships*. New York: Guilford Press.

Terrizzi Jr, J. A., Shook, N. J., & Ventis, W. L. (2010). Disgust: A predictor of social conservatism and prejudicial attitudes toward homosexuals. *Personality and individual differences*, *49*, 587-592. doi: 10.1016/j.paid.2010.05.024

Todd A. R., Bodenhausen G. V., Richeson J. A., & Galinsky A. D. (2011). Perspective taking combats automatic expressions of racial bias. *Journal of Personality and Social Psychology, 100*, 1027–1042. doi: 10.1037/a0022308

van Overveld, M., de Jong, P. J., Peters, M. L., Cavanagh, K., & Davey, G. C. L. (2006). Disgust propensity and disgust sensitivity: Separate constructs that are differentially related to specific fears. *Personality and Individual Differences, 41,* 1241-1252. doi:10.1016/j.paid.2006.04.021

Wang, A. S. (1998). Demystifying the Asian American neo-conservative: A strange and new political animal. *Asian American Law Journal, 5,* 213-246. Retrieved from http://scholarship.law.berkeley.edu/aalj/vol5/iss1/8

Way, B. M., Masers, R. D. (1996). Political attitudes: Interactions of cognition and affect. *Motivation and Emotion, 20,* 205-236. Retrieved from http://faculty.psy.ohio-state.edu/way/documents/political_attitudes_intereactions_of_cognition_and_affect-Motivation-and-Emotion.pdf

Wicker, B., Keysers, C., Plailly, J., Royet, J. P., Gallese, V., & Rizzolatti, G. (2003). Both of us disgusted in my insula: the common neural basis of seeing and feeling disgusted. *Neuron, 40,* 655-664. doi: 10.1016/S0896-6273(03)00679-2

Wondra, J.D., & Ellsworth, P. C. (2015). An appraisal theory of empathy and other vicarious emotional experiences. *Psychological Review, 122,* 411-428. doi: 10.1037/a0039252

Appendix A

Australian Political Ideology Scale

1. Immigrants are a threat to our society
2. Australia should be allowing more asylum seekers into the country (R)
3. There are too many immigrants in Australia, so sometimes I feel strange in my own country
4. Islam is a threat to Australian culture
5. Other religions, such as Islam, enrich our country (R)
6. Immigrants take the locals' jobs.
7. No more mosques should be built in Australia
8. Immigrants bring more crime
9. Headscarves are oppressive
10. It's better for our society if immigrants keep their own traditions and habits
11. If you immigrate to Australia, you should learn the language
12. It's okay for people to have sex before marriage (R)
13. Gay couples should be allowed to adopt children (R)
14. If gay people are allowed to marry in the future, it shouldn't be called a 'marriage'
15. People who are openly gay shouldn't serve in the military
16. Gay marriage should be legalized (R)
17. Abortion should be illegal
18. The Mardi Gras is a positive aspect of Australian culture (R)
19. In principle, there is nothing wrong with a one-night stand (R)
20. Saying sorry to the stolen generation was the right thing to do (R)
21. Aborigines and Torres strait islanders should not get as many benefits as they do
22. Acknowledging the traditional custodians of the land is unnecessary and is keeping Australia in the past
23. Indigenous languages should not be spoken
24. The date of Australia Day should be changed out of respect for Indigenous peoples (R)
25. Men are better in their work than women
26. Women are less capable of working than men
27. I would prefer to have a man in a leadership position than a woman
28. When women complain about sexism, they frequently just want to work the situation to their favor
29. If a couple has children, it's better if the woman stays home to raise them
30. The minimum wage should be raised (R)
31. It should be easier for employers to fire employees
32. Unions have too much power in Australian workplaces
33. It's fair that people with a higher income pay relatively more taxes than people with a lower income (R)
34. It is important for Australian employees to join a Union (R)

35. Australia should take their troops out of Syria (R)
36. Australia should not provide military assistance to foreign countries in the war against terrorism (R)
37. The Australian government isn't doing enough to prevent radicalization and extremism in Australia
38. The Australian government is spending too much money on foreign intervention (R)
39. The long term gains of Australian troops working in places like Afghanistan and Iraq are worthwhile (i.e. teaching them to defend themselves, providing security)

Appendix B

Reliability Output for the APIS

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.906	.907	39

Reliability Statistics

Cronbach's Alpha	Part 1	Value	.828
		N of Items	20 [a]
	Part 2	Value	.821
		N of Items	19 [b]
	Total N of Items		39
Correlation Between Forms			.865
Spearman-Brown Coefficient	Equal Length		.928
	Unequal Length		.928
Guttman Split-Half Coefficient			.927

a. The items are: PIS1, PIS3, PIS5R, PIS7, PIS9, PIS11, PIS13R, PIS15, PIS17, PIS19R, PIS20R, PIS22, PIS24R, PIS25, PIS28, PIS32, PIS34R, PIS35R, PIS37, PIS39.

b. The items are: PIS2R, PIS4, PIS6, PIS8, PIS10, PIS12R, PIS14, PIS16R, PIS18R, PIS21, PIS23, PIS26, PIS27, PIS29, PIS30R, PIS31, PIS33R, PIS36R, PIS38R.

Scale Statistics

	Mean	Variance	Std. Deviation	N of Items
Part 1	46.28	88.536	9.409	20 [a]
Part 2	40.93	82.370	9.076	19 [b]
Both Parts	87.20	318.693	17.852	39

a. The items are: PIS1, PIS3, PIS5R, PIS7, PIS9, PIS11, PIS13R, PIS15, PIS17, PIS19R, PIS20R, PIS22, PIS24R, PIS25, PIS28, PIS32, PIS34R, PIS35R, PIS37, PIS39.

b. The items are: PIS2R, PIS4, PIS6, PIS8, PIS10, PIS12R, PIS14, PIS16R, PIS18R, PIS21, PIS23, PIS26, PIS27, PIS29, PIS30R, PIS31, PIS33R, PIS36R, PIS38R.

Appendix C

Approval Letter

Social Science Ethics Officer
Private Bag 01 Hobart
Tasmania 7001 Australia
Tel: (03) 6226 2763
Fax: (03) 6226 7148
Katherine.Shaw@utas.edu.au

HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK

UTAS

28 April 2016

Ms Christine Padgett
Division of Psychology
University of Tasmania

Student researchers: Anna-Kate Fitzgerald, Abbey Walker

Sent via email

Dear Ms Padgett

Re: MINIMAL RISK ETHICS APPLICATION APPROVAL
Ethics Ref: **H0015690 - The influence of emotion on intentions for voting behavior**

We are pleased to advise that acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 27 April 2016.

This approval constitutes ethical clearance by the Tasmania Social Sciences Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approval of other bodies or authorities is required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

Please note that this approval is for four years and is conditional upon receipt of an annual Progress Report. Ethics approval for this project will lapse if a Progress Report is not submitted.

The following conditions apply to this approval. Failure to abide by these conditions may result in suspension or discontinuation of approval.

1. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval, to ensure the project is conducted as approved by the Ethics Committee, and to notify the Committee if any investigators are added to, or cease involvement with, the project.

2. Complaints: If any complaints are received or ethical issues arise during the course of the project, investigators should advise the Executive Officer of the Ethics Committee on 03 6226 7479 or human.ethics@utas.edu.au.

3. Incidents or adverse effects: Investigators should notify the Ethics Committee immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

4. Amendments to Project: Modifications to the project must not proceed until approval is obtained from the Ethics Committee. Please submit an Amendment Form (available on our website) to notify the Ethics Committee of the proposed modifications.

5. Annual Report: Continued approval for this project is dependent on the submission of a Progress Report by the anniversary date of your approval. You will be sent a courtesy reminder closer to this date. **Failure to submit a Progress Report will mean that ethics approval for this project will lapse.**

6. Final Report: A Final Report and a copy of any published material arising from the project, either in full or abstract, must be provided at the end of the project.

Yours sincerely

Katherine Shaw
Executive Officer
Tasmania Social Sciences HREC

Appendix D

Participant Information Sheet

Emotion in Politics:

Disgust and Empathy Predicting Australian Political Ideology

You are invited to participant in a research study to assess the relationship between disgust sensitivity and political ideology, and whether empathy impacts this relationship. The study is completed by Abbey Walker as a part of her psychology honours thesis under the supervision of Christine Padgett at the University of Tasmania.

The purpose of the research is to investigate how types of empathy and levels of disgust sensitivity lead to a prediction of political views.

You have been invited to complete this research as you are a member of the KHA116 practical class, over the age of 18.

To complete the following research, you will need to provide us with some demographic information, and complete three scales. Altogether, this task should take around 30 minutes.

There are no foreseen risks of participating in this study. Benefits of the study will include contributing to the body of psychology knowledge which may lead to a better understanding of the mechanisms which influence voting choices. This may be useful as it will provide an insight into why some people do/do not approve of progressive movements (i.e. same sex marriage, immigration).

All members of the KHA116 class will be asked to complete this research as a part of their practical activities. However, if students do not wish to participate, they can feel free to withdraw at any time. Similarly, data will be excluded from analysis if students do not give consent (located on the demographics form).

If you have any questions about the nature of the study, or would like to be informed of the results following publication, feel free to ask Abbey Walker (abbeyw@utas.edu.au) or her supervisor Christine Padgett (christine.padgett@utas.edu.au).

Appendix E

Consent and Demographic Information Form

Consent

By signing this consent form below,

I, _____ (*your name)* agree to my data being used in this study and understand I can withdraw at any time.

Signature: _____

Date: ____/____/_____

Demographics

Q1: Is English your first language?

Yes/No

Q2: What is your gender?

- Female
- Male
- Would rather not say

Q3: How old are you?

_____

Q4: What is your ethnicity?

- Aboriginal
- White/Caucasian
- Black/African decent
- Asian
- Pacific Islander
- Hispanic

Q5: What is the highest level of education you have completed?

- High school/college
- Bachelor's degree
- Master's degree
- Doctorate degree

Q6: Are you religious? If so, what religion do you associate yourself with?

_____

Q7: How strongly do you associate with this religion? (please circle)

1= very little, 10= very strongly

1 2 3 4 5 6 7 8 9 10

Voting History

Q8: What party did you vote for in the last election? If you did not vote in the last election, choose what party you think you would have voted for.

- Labor
- Liberal
- Greens
- Other (please specify)

_____

Q9: How strongly do you associate with this political party? (please circle)

1= very little, 10= very strongly

1 2 3 4 5 6 7 8 9 10

Q10: If an election happened in the near future would you vote for the same party again? (please circle)

Yes / No

Appendix F

Demographic Breakdown of Scale Scores

In relation to demographic differences of the DS-R scores, the current sample found a significant difference between sexes. Males had moderately greater disgust sensitivity (M = 13.08, SD = 2.16) than females (M = 12.04, SD = 2.17), t (167) = 2.39, p = 0.018, Cohen's d = 0.48, a result inconsistent with previous findings (i.e. Brenner & Inbar, 2014; Haidt, McCauley, & Rozin, 1994). No significant differences were found across age, strength of religious belief, between ethnicities or whether English was their first spoken language, with all significance values > p = .6, and F-test values < 0.28, these results were in line with those found by previous researchers (Inbar, Pizarro & Bloom, 2009).

Looking at scores across the BES-A scale as a whole, there were no significant differences between ethnicities, whether or not English was their first language, with t-test values < 0.33, and significance values >.739. There was also no significant relationship of BES-A scores across strength of religiosity or age with r values < .10, and significance values > p = .19. A significant difference was found of empathy scores between the sexes, with males having moderately lower empathy scores (M = 71.83, SD = 8.98) than females (M = 77.27, SD = 9.70), t (168) = -2.82, p =.005, Cohen's d = 0.57, these results were consistent with the majority of previous findings (i.e., Carrè et al., 2013; Jolliffe & Farrington, 2006). However, other researchers have found there to be no sex differences (Cox et al., 2012). Correlation between the affective (M = 40.64, SD = 6.85) and cognitive (M = 35.04, SD = 4.71) subscales of the BES-A was significant, $r(N=170) = .58$, $p < .001$. This relationship

is of moderate strength, inferring that the subscales should not be impacted on by possible multicollinearity effects.

There were no significant differences between gender, or levels of completed education, or across age with a significance values > p = .172, and all F-values < 1.78. There was a significant difference between ethnicities, with Caucasians having more liberal scores on the APIS (M = 85.69, SD = 17.18) compared to other ethnicities (M = 94.05, SD = 18.68), t (168) =-2.02, p=.045, this represented a small to moderate effect, Cohen's d = 0.48. These results are likely to be reflected by the marginally large difference found between whether the participant spoke English as their first language (M = 85.49, SD =17.06) or not (M = 98.87, SD = 18.15), t (168) =-2.88, p = .004, Cohen's d =.78. These findings were unexpected, as it is common for ethnic minorities to favour parties which favour change and accept differences (Jacobs, Teney, Rea & Delwit, 2016), themes not commonly associated with conservative political parties. Due to the diverse range and small number of individuals identifying with ethnicities included in this group, nothing can be drawn in relation to a particular cultural difference.

There was also a significant correlation between measurements of participant religiosity (0 = no belief, 10 = strong belief) and APIS scores, r(N=170) =.218, p = .004, meaning that as participant level of religiosity increased, so too did their level of conservatism. This finding was expected due to findings outlined in previous research (Sherkat, Powell-Williams, Maddox, & de Vries, 2011). Due to this result, religiosity strength was later entered as a covariate in the mediation model to control for the relationship.

Appendix G

SPSS output for Demographic Differences across Scale Scores

Frequencies:

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	30	17.6	17.6	17.6
	Female	139	81.8	81.8	99.4
	Unknown	1	.6	.6	100.0
	Total	170	100.0	100.0	

Language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	English First	155	91.2	91.2	91.2
	English Second	15	8.8	8.8	100.0
	Total	170	100.0	100.0	

Ethnic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Caucasian	150	88.2	88.2	88.2
	Other	20	11.8	11.8	100.0
	Total	170	100.0	100.0	

Strength

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	80	47.1	47.1	47.1
	1	21	12.4	12.4	59.4
	2	15	8.8	8.8	68.2
	3	8	4.7	4.7	72.9
	4	6	3.5	3.5	76.5
	5	7	4.1	4.1	80.6
	6	12	7.1	7.1	87.6
	7	5	2.9	2.9	90.6
	8	4	2.4	2.4	92.9
	9	3	1.8	1.8	94.7
	10	9	5.3	5.3	100.0
	Total	170	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	49	28.8	28.8	28.8
	19	38	22.4	22.4	51.2
	20	18	10.6	10.6	61.8
	21	9	5.3	5.3	67.1
	22	5	2.9	2.9	70.0
	23	2	1.2	1.2	71.2
	24	4	2.4	2.4	73.5
	25	4	2.4	2.4	75.9
	26	2	1.2	1.2	77.1
	27	2	1.2	1.2	78.2
	28	2	1.2	1.2	79.4
	29	3	1.8	1.8	81.2
	30	2	1.2	1.2	82.4
	31	3	1.8	1.8	84.1
	32	4	2.4	2.4	86.5
	33	1	.6	.6	87.1
	34	1	.6	.6	87.6
	35	2	1.2	1.2	88.8
	37	1	.6	.6	89.4
	38	2	1.2	1.2	90.6
	39	1	.6	.6	91.2
	40	1	.6	.6	91.8
	41	1	.6	.6	92.4
	42	2	1.2	1.2	93.5
	44	3	1.8	1.8	95.3
	45	2	1.2	1.2	96.5
	46	2	1.2	1.2	97.6
	48	1	.6	.6	98.2
	49	1	.6	.6	98.8
	51	1	.6	.6	99.4
	61	1	.6	.6	100.0
	Total	170	100.0	100.0	

HighEduc

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HighSchool/College/TAFE	157	92.4	92.4	92.4
	Bachelor	11	6.5	6.5	98.8
	PostGrad	2	1.2	1.2	100.0
	Total	170	100.0	100.0	

Religion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	124	72.9	72.9	72.9
	Yes	46	27.1	27.1	100.0
	Total	170	100.0	100.0	

Descriptive Statistics for Demographics

Statistics

		Age	Language	Gender	Ethnic	HighEduc	Religion	Strength
N	Valid	170	170	170	170	170	170	170
	Missing	0	0	0	0	0	0	0
Mean		23.60	1.09	1.83	1.12	1.09	1.27	2.29
Std. Deviation		8.580	.284	.393	.323	.323	.446	3.082
Minimum		18	1	1	1	1	1	0
Maximum		61	2	3	2	3	2	10
Sum		4012	185	311	190	185	216	390

Differences in scores according to the DS-R, BES-A (cognitive and affective subscale scores) and APIS:

Ethnicity: Caucasian vs. other.

Group Statistics

	Ethnic	N	Mean	Std. Deviation	Std. Error Mean
CogGRAND	Caucasian	150	35.11	4.530	.370
	Other	20	35.05	3.886	.869
AffGRAND	Caucasian	150	40.71	6.975	.570
	Other	20	40.50	6.143	1.374
DSRGRAND	Caucasian	150	12.25	2.269	.185
	Other	20	12.23	1.743	.390
GRANDPIS	Caucasian	150	85.69	17.182	1.403
	Other	20	94.05	18.684	4.178

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CogGRAND	Equal variances assumed	.478	.490	.060	168	.953	.063	1.062	-2.033	2.160
	Equal variances not assumed			.067	26.396	.947	.063	.944	-1.877	2.003
AffGRAND	Equal variances assumed	.095	.759	.126	168	.900	.207	1.639	-3.029	3.443
	Equal variances not assumed			.139	25.996	.891	.207	1.487	-2.850	3.263
DSRGRAND	Equal variances assumed	.926	.337	.054	168	.957	.028	.527	-1.013	1.070
	Equal variances not assumed			.066	28.366	.948	.028	.432	-.855	.912
GRANDPIS	Equal variances assumed	2.032	.156	-2.024	168	.045	-8.363	4.132	-16.521	-.206
	Equal variances not assumed			-1.898	23.488	.070	-8.363	4.407	-17.470	.743

Religion: Yes, I identify as religious, vs. no I do not identify as religious

Group Statistics

	Religion	N	Mean	Std. Deviation	Std. Error Mean
CogGRAND	No	124	34.60	4.524	.406
	Yes	46	36.48	3.965	.585
AffGRAND	No	124	39.96	6.428	.577
	Yes	46	42.63	7.666	1.130
DSRGRAND	No	124	12.27	2.211	.199
	Yes	46	12.20	2.227	.328
GRANDPIS	No	124	85.22	17.130	1.538
	Yes	46	90.59	18.135	2.674

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
										95% Confidence Interval of the Difference
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CogGRAND	Equal variances assumed	.502	.479	-2.487	168	.014	-1.881	.756	-3.375	-.388
	Equal variances not assumed			-2.643	91.187	.010	-1.881	.712	-3.296	-.467
AffGRAND	Equal variances assumed	1.220	.271	-2.281	168	.024	-2.671	1.171	-4.982	-.359
	Equal variances not assumed			-2.104	69.799	.039	-2.671	1.269	-5.202	-.139
DSRGRAND	Equal variances assumed	.010	.922	.195	168	.846	.075	.382	-.680	.830
	Equal variances not assumed			.194	79.997	.847	.075	.384	-.689	.838
GRANDPIS	Equal variances assumed	.579	.448	-1.787	168	.076	-5.369	3.005	-11.301	.563
	Equal variances not assumed			-1.741	76.646	.086	-5.369	3.085	-11.512	.774

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
CogGRAND	Male	30	33.43	4.431	.809
	Female	139	35.47	4.399	.373
AffGRAND	Male	30	37.87	5.582	1.019
	Female	139	41.32	6.992	.593
DSRGRAND	Male	30	13.08	2.158	.394
	Female	139	12.04	2.168	.184
GRANDPIS	Male	30	85.00	19.053	3.479
	Female	139	86.96	17.263	1.464

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CogGRAND	Equal variances assumed	.057	.812	-2.302	167	.023	-2.041	.887	-3.792	-.291
	Equal variances not assumed			-2.292	42.250	.027	-2.041	.891	-3.839	-.244
AffGRAND	Equal variances assumed	1.087	.299	-2.537	167	.012	-3.457	1.363	-6.147	-.767
	Equal variances not assumed			-2.932	50.747	.005	-3.457	1.179	-5.824	-1.090
DSRGRAND	Equal variances assumed	.145	.704	2.385	167	.018	1.040	.436	.179	1.901
	Equal variances not assumed			2.392	42.589	.021	1.040	.435	.163	1.917
GRANDPIS	Equal variances assumed	.719	.398	-.553	167	.581	-1.957	3.541	-8.947	5.033
	Equal variances not assumed			-.518	39.923	.607	-1.957	3.774	-9.585	5.672

Group Statistics

	Language	N	Mean	Std. Deviation	Std. Error Mean
CogGRAND	English First	155	35.16	4.463	.358
	English Second	15	34.53	4.406	1.138
AffGRAND	English First	155	40.68	6.875	.552
	English Second	15	40.73	7.015	1.811
DSRGRAND	English First	155	12.26	2.257	.181
	English Second	15	12.10	1.692	.437
GRANDPIS	English First	155	85.49	17.056	1.370
	English Second	15	98.87	18.150	4.686

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CogGRAND	Equal variances assumed	.041	.839	.521	168	.603	.628	1.205	-1.752	3.008
	Equal variances not assumed			.527	16.903	.605	.628	1.193	-1.889	3.145
AffGRAND	Equal variances assumed	.289	.592	-.030	168	.976	-.056	1.862	-3.732	3.620
	Equal variances not assumed			-.030	16.710	.977	-.056	1.894	-4.056	3.944
DSRGRAND	Equal variances assumed	.996	.320	.275	168	.784	.165	.599	-1.018	1.347
	Equal variances not assumed			.348	19.180	.732	.165	.473	-.825	1.154
GRANDPIS	Equal variances assumed	.202	.654	-2.884	168	.004	-13.376	4.637	-22.531	-4.221
	Equal variances not assumed			-2.740	16.484	.014	-13.376	4.882	-23.702	-3.051

ANOVA results for education level on APIS

Descriptive Statistics

Dependent Variable: GRANDPIS

HighEduc	Mean	Std. Deviation	N
HighSchool/College/TAFE	87.35	17.251	157
Bachelor	77.09	17.604	11
PostGrad	86.00	35.355	2
Total	86.67	17.517	170

Tests of Between-Subjects Effects

Dependent Variable: GRANDPIS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1082.911 [a]	2	541.456	1.781	.172	.021
Intercept	105010.990	1	105010.990	345.386	.000	.674
HighEduc	1082.911	2	541.456	1.781	.172	.021
Error	50774.642	167	304.040			
Total	1328862.000	170				
Corrected Total	51857.553	169				

a. R Squared = .021 (Adjusted R Squared = .009)

ANOVA results for education level on Cognitive Empathy BES-A scores

Descriptive Statistics

Dependent Variable: CogGRAND

HighEduc	Mean	Std. Deviation	N
HighSchool/College/TAFE	35.00	4.468	157
Bachelor	37.27	3.717	11
PostGrad	31.50	3.536	2
Total	35.11	4.448	170

Tests of Between-Subjects Effects

Dependent Variable: CogGRAND

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	79.412 [a]	2	39.706	2.031	.134	.024
Intercept	18029.744	1	18029.744	922.285	.000	.847
HighEduc	79.412	2	39.706	2.031	.134	.024
Error	3264.682	167	19.549			
Total	212856.000	170				
Corrected Total	3344.094	169				

a. R Squared = .024 (Adjusted R Squared = .012)

ANOVA results for education level on Affective Empathy BES-A scores

Descriptive Statistics

Dependent Variable: AffGRAND

HighEduc	Mean	Std. Deviation	N
HighSchool/College/TAFE	40.51	6.979	157
Bachelor	42.82	5.492	11
PostGrad	42.50	2.121	2
Total	40.68	6.866	170

Tests of Between-Subjects Effects

Dependent Variable: AffGRAND

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	61.475 [a]	2	30.738	.649	.524	.008
Intercept	26507.933	1	26507.933	559.977	.000	.770
HighEduc	61.475	2	30.738	.649	.524	.008
Error	7905.372	167	47.338			
Total	289326.000	170				
Corrected Total	7966.847	169				

a. R Squared = .008 (Adjusted R Squared = -.004)

ANOVA results for education level on DS-R

Descriptive Statistics

Dependent Variable: DSRGRAND

HighEduc	Mean	Std. Deviation	N
HighSchool/College/TAFE	12.17	2.164	157
Bachelor	14.09	1.578	11
PostGrad	8.75	2.475	2
Total	12.25	2.209	170

Tests of Between-Subjects Effects

Dependent Variable: DSRGRAND

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	62.897 [a]	2	31.448	6.895	.001	.076
Intercept	2051.733	1	2051.733	449.818	.000	.729
HighEduc	62.897	2	31.448	6.895	.001	.076
Error	761.728	167	4.561			
Total	26335.250	170				
Corrected Total	824.625	169				

a. R Squared = .076 (Adjusted R Squared = .065)

Correlation for age on the APIS, DSR, cognitive empathy and affective empathy BES-A scores

Correlations

		Age	DSRGRAND	CogGRAND	AffGRAND	GRANDPIS
Age	Pearson Correlation	1	.033	.112	.040	-.081
	Sig. (2-tailed)		.673	.145	.603	.295
	N	170	170	170	170	170
DSRGRAND	Pearson Correlation	.033	1	.017	-.169*	-.150
	Sig. (2-tailed)	.673		.821	.028	.051
	N	170	170	170	170	170
CogGRAND	Pearson Correlation	.112	.017	1	.573**	-.164*
	Sig. (2-tailed)	.145	.821		.000	.033
	N	170	170	170	170	170
AffGRAND	Pearson Correlation	.040	-.169*	.573**	1	-.125
	Sig. (2-tailed)	.603	.028	.000		.104
	N	170	170	170	170	170
GRANDPIS	Pearson Correlation	-.081	-.150	-.164*	-.125	1
	Sig. (2-tailed)	.295	.051	.033	.104	
	N	170	170	170	170	170

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation for strength of religious belief on the APIS, DSR, cognitive empathy and affective empathy BES-A scores

Correlations

		DSRGRAND	CogGRAND	AffGRAND	GRANDPIS	Strength
DSRGRAND	Pearson Correlation	1	.017	-.169*	-.150	-.008
	Sig. (2-tailed)		.821	.028	.051	.919
	N	170	170	170	170	170
CogGRAND	Pearson Correlation	.017	1	.573**	-.164*	.089
	Sig. (2-tailed)	.821		.000	.033	.250
	N	170	170	170	170	170
AffGRAND	Pearson Correlation	-.169*	.573**	1	-.125	.100
	Sig. (2-tailed)	.028	.000		.104	.197
	N	170	170	170	170	170
GRANDPIS	Pearson Correlation	-.150	-.164*	-.125	1	.218**
	Sig. (2-tailed)	.051	.033	.104		.004
	N	170	170	170	170	170
Strength	Pearson Correlation	-.008	.089	.100	.218**	1
	Sig. (2-tailed)	.919	.250	.197	.004	
	N	170	170	170	170	170

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix H

Correlation of the BES-A Subscales

Descriptive Statistics

	Mean	Std. Deviation	N
CogGRAND	35.11	4.448	170
AffGRAND	40.68	6.866	170

Correlations

		CogGRAND	AffGRAND
CogGRAND	Pearson Correlation	1	.573**
	Sig. (2-tailed)		.000
	N	170	170
AffGRAND	Pearson Correlation	.573**	1
	Sig. (2-tailed)	.000	
	N	170	170

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix I

Correlation of APIS scores with Strength of Religious Belief

Correlations

		Strength	GRANDPIS
Strength	Pearson Correlation	1	.218**
	Sig. (2-tailed)		.004
	N	170	170
GRANDPIS	Pearson Correlation	.218**	1
	Sig. (2-tailed)	.004	
	N	170	170

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix J

Descriptive Statistics for Scales Employed

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
DSRGRAND	170	13	7	20	12.25	.169	2.209	4.879	.208	.186	.224	.370
GrandBES	170	47	51	98	76.27	.748	9.757	95.193	-.172	.186	-.206	.370
GRANDPIS	170	81	49	130	86.67	1.344	17.517	306.849	.048	.186	-.539	.370
AffGRAND	170	37	18	55	40.68	.527	6.866	47.141	-.411	.186	.323	.370
CogGRAND	170	24	21	45	35.11	.341	4.448	19.788	-.172	.186	.176	.370
Valid N (listwise)	170											

Appendix K

PROCESS Output

Mediation: Affective Empathy

```
Run MATRIX procedure:

********** PROCESS Procedure for SPSS Release 2.16.1***************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

**************************************************************************
Model = 4
    Y = GRANDPIS
    X = DSRGRAND
    M = AffGRAND

Statistical Controls:
CONTROL= Strength

Sample size
        170

**************************************************************************
Outcome: AffGRAND

Model Summary
 R       R-sq        MSE          F        df1        df2          p
.1951   .0380    45.8905     3.3028     2.0000   167.0000      .0392

Model
       coeff         se          t          p       LLCI       ULCI
constant  46.5687  2.9647    15.7077      .0000    40.7156   52.4218
DSRGRAND  -.5215   .2359    -2.2105      .0284     -.9872     -.0557
Strength   .2188   .1691     1.2939      .1975     -.1150      .5526

**************************************************************************
Outcome: GRANDPIS

Model Summary
 R       R-sq        MSE          F        df1        df2     p
.3168      .1004   281.0441     6.1725     3.0000   166.0000  .0005

Model
        coeff         se       t          p       LLCI       ULCI
constant   119.4793  11.5480  10.3463    .0000    96.6793   142.2793
AffGRAND   -.4559     .1915    -2.3808   .0184     -.8340     -.0778
DSRGRAND    -1.4139   .5923    -2.3872   .0181    -2.5833     -.2445
Strength    1.3337    .4205     3.1716   .0018      .5034     2.1640

********************** TOTAL EFFECT MODEL**************************
Outcome: GRANDPIS

Model Summary
```

```
R       R-sq        MSE          F        df1        df2          p
.2639   .0696   288.9001     6.2500     2.0000   167.0000      .0024

Model
           coeff     se        t         p       LLCI       ULCI
constant   98.2477   7.4386    13.2078  .0000    83.5618   112.9336
DSRGRAND   -1.1762   .5919    -1.9871   .0486    -2.3448     -.0076
Strength   1.2340    .4242     2.9087   .0041      .3964     2.0715

************ TOTAL, DIRECT, AND INDIRECT EFFECTS*******************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
    -1.1762      .5919    -1.9871      .0486    -2.3448     -.0076

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
    -1.4139      .5923    -2.3872      .0181    -2.5833     -.2445

Indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
AffGRAND      .2378      .1899      .0042      .7600

Partially standardized indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
AffGRAND      .0139      .0111      .0002      .0441

Completely standardized indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
AffGRAND      .0307      .0236      .0006      .0952

Ratio of indirect to total effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
AffGRAND     -.2021     4.5000    -2.8702      .0178

Ratio of indirect to direct effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
AffGRAND     -.1682      .9917     -.9319      .0025

*************** ANALYSIS NOTES AND WARNINGS************************

Number of bootstrap samples for bias corrected bootstrap confidence
intervals:
     5000

Level of confidence for all confidence intervals in output:
    95.00

------ END MATRIX -----
```

Appendix L

PROCESS Output

Mediation: Cognitive Empathy

```
Run MATRIX procedure:

**********PROCESS Procedure for SPSS Release 2.16.1*****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

**************************************************************************
Model = 4
    Y = GRANDPIS
    X = DSRGRAND
    M = CogGRAND

Statistical Controls:
CONTROL= Strength

Sample size
        170

**************************************************************************
Outcome: CogGRAND

Model Summary
  R       R-sq        MSE          F        df1        df2      p
.0906      .0082    19.8601      .6914     2.0000   167.0000   .5023

Model
          coeff       se          t          p       LLCI     ULCI
constant 34.3635    1.9503     17.6192    .0000     30.5130  38.2140
DSRGRAND .0366      .1552      .2356      .8140     -.2698     .3430
Strength .1283      .1112      1.1539     .2502     -.0913     .3479

**************************************************************************
Outcome: GRANDPIS

Model Summary
   R       R-sq        MSE          F        df1        df2       p
 .3203      .1026   280.3538     6.3239     3.0000   166.0000 .0004

Model
              coeff    se       t          p    LLCI     ULCI
constant   122.9047  12.3900  9.9196   .0000    98.4423   147.3671
CogGRAND   -.7175    .2907    -2.4680  .0146    -1.2916  -.1435
DSRGRAND   -1.1499   .5832    -1.9718  .0503    -2.3014   .0015
Strength     1.3261  .4196     3.1605  .0019      .4977  2.1545

********************* TOTAL EFFECT MODEL************************
Outcome: GRANDPIS

Model Summary
 R       R-sq     MSE        F      df1        df2      p
```

```
.2639   .0696   288.9001   6.2500   2.0000  167.0000    .0024

Model
           coeff     se         t          p       LLCI     ULCI
constant    98.2477   7.4386   13.2078    .0000   83.5618   112.9336
DSRGRAND    -1.1762   .5919    -1.9871    .0486   -2.3448     -.0076
Strength     1.2340   .4242    2.9087     .0041    .3964     2.0715

*************** TOTAL, DIRECT, AND INDIRECT EFFECTS*****************
Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
    -1.1762      .5919    -1.9871      .0486    -2.3448     -.0076

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
    -1.1499      .5832    -1.9718      .0503    -2.3014      .0015

Indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
CogGRAND     -.0262      .1173     -.3110      .1947

Partially standardized indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
CogGRAND     -.0015      .0069     -.0180      .0114

Completely standardized indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
CogGRAND     -.0034      .0150     -.0408      .0243

Ratio of indirect to total effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
CogGRAND      .0223      .6655     -.2707      .5164

Ratio of indirect to direct effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
CogGRAND      .0228      .6994     -.2238      .7008

******************** ANALYSIS NOTES AND WARNINGS********************

Number of bootstrap samples for bias corrected bootstrap confidence
intervals:
     5000

Level of confidence for all confidence intervals in output:
    95.00

------ END MATRIX -----
```